Web data warehousing: What's not to like? Our expanded Intranets supplement follows page 48

Stay-on contracts in exchange for expensive training take a heavy toll on loyalty. Careers, page 89

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Web-enabling the enterprise

Mainframes brace for browser access

By Tim Ouellette

MAINFRAME SHOPS are coming to grips with the fact that they soon will be invaded by probing Web browsers.

In the coming months, several vendors, including Apertus Technologies, Inc., will roll out products that make browser-to-mainframe connectivity a reality (see chart, page 107).

Businesses can use this new access to get data now locked in the mainframe — estimated to be 70% of corporate data worldwide — out to a wider audience.

The primary goal of most of the new products is first to provide basic mainframe terminal emulation from a World Wide Web browser. Then users can Web-enable mainframe applications via Java applets or reliable middleware products, possibly without reprogramming any of

Mainframes, page 107

New tools support complex 'net sites

By Mitch Wagner

VENDORS ARE starting to roll out the big bulldozers of Internet development tools: software packages designed to build large, complicated World Wide Web sites that span the enterprise.

The tools were designed to help users build Internet applications that cover all aspects of a business, from marketing and communications to order entry, transaction processing, online sales and other mission-critical functions.

LEGACY ACCESS

These new lines of Internet earthmovers include features designed to let Web applications access information stored in legacy systems, such as mainframes, and client/server applications. Some have collaboration features that let technically savvy information systems managers collaborate with less-technical business managers, writers and artists. Some also have specialized servers designed for high performance.

The tools were designed to bring the same level of maturity

New tools, page 107

INSIDE THIS ISSUE

[illegible] enterprise object technology. Page 3

IS reins in runaway projects

▸ *Users fight failures with better management*

By Julia King

LAST YEAR, 73% of corporate America's software projects were canceled, over budget or late. But that was a noticeable improvement over the 1995 figure of 84%, according to a survey of 360 companies.

The Standish Group International, Inc. survey explained that information systems departments are finally starting to focus on the rigors of project management.

Their motivation is simple: With IS project failures costing

Project management, page 16

IS money can't buy happiness

▸ *Pay isn't top factor when weighing job offers*

By Robert L. Scheier

IT'S NOT UNUSUAL for in-demand IS professionals like Glenn Hansen to get several calls a week — or even several a day — trying to lure them to new jobs.

Hansen recently got an offer that included a 25% raise. He rejected it, but not because his current employer made a counteroffer. He stayed because "I'm going through a lot of training right now," says Hansen, a LAN specialist at Seta, Inc., a computer consulting firm in McLean, Va. "I want to get my credentials up" before even considering a job offer, he said.

Hansen's not alone. A *Computerworld* survey of 206 information systems professionals found money wasn't the most important factor in deciding whether to jump ship.

Other factors, such as the opportunity to learn new technologies and having a good boss, were more important.

That's good news for IS man-

Treat 'em right, page 77

From interactive, **revenue-generating** World Wide Web sites to intranets that **streamline business**, this year's **Premier 100** honors Internet innovators. How did they do it? What did they learn? What obstacles were they up against? Find all this and more in the ninth Premier edition, bundled with this week's issue. (To find out about ordering additional copies, see page 4.)

NEWSPAPER

UP FRONT

Keep it simple

I recently had to call someone at one of *Computerworld*'s business partners. I didn't have the phone number, so I typed the URL into my browser and headed to the company's Web site to find it.

Ten minutes later, I was still looking.

What started as a quick request for basic business information turned into a spelunking expedition through layers of information I didn't want. I never did find that phone number.

It's with this experience in mind that we begin this week an ongoing series of reviews of user Web sites (see page 72). Staff columnist Frank Hayes cruised through the offerings from the major airlines and found that many weren't doing a good job of optimizing their Web sites to meet the needs of customers.

In coming months, we'll look at many other industries and examine their sites through customers' eyes. We'll tell you how well these sites meet the basic informational needs of their target audiences.

1997 will be the year the Web gets real.

We believe the time is right for this service, because 1997 will be the year the Web gets real. International Data Corp. has estimated that 90% of large companies will have Web sites by the end of this year. You simply have to be there. Expect to see an increasing number of sites get back to basics. Giant graphics and Shockwave animations will give way to simpler, more easily downloadable files with intuitive navigation paths.

Good design is about giving the user a rewarding experience. Unfortunately, no one has the answer to what makes a Web site easy to use. That's why we'll try to give you some best practices, pointing you to services and navigation techniques that work and ones that don't. I'm anxious to hear comments about our reviews. E-mail me at the address below or go to www.computerworld.com. You'll find my phone number there.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

"I think the cursor's not moving, Mr. Dunt, because you've got your hand on the chalk board eraser and not the mouse."

E-mail Rich Tennant at thejwave@tiac.net

Web-ready rollout en route

▸ *Client/server vendors prepare Internet modules*

By Randy Weston

TOP CLIENT/SERVER application vendors are preparing to release Internet-ready application packages as the first batch of network computers lands in corporate offices.

That means information systems managers can load the complex software on centralized servers and let end users access modules on an as-needed basis via World Wide Web browsers.

Market leader SAP AG in Wayne, Pa., plans to release Web-enabled versions of its R/3 application package with Version 4.0, which is due out in late summer. No. 2 player Oracle Corp. in Redwood Shores, Calif., will port all 30 of its software modules to the Internet by June with Release 10.7.

Meanwhile, smaller vendors such as Denver-based J.D. Edwards & Co. and Atlanta-based American Software USA, Inc. are building Web-ready modules. Minneapolis-based Lawson Software, Inc. did the same last year.

Dunlop Tire Corp. plans to exploit the Web-ready software trend and buy 700 Network Computers from Oracle or Sun Microsystems, Inc. The Buffalo, N.Y., tire maker will test Oracle 10.7 on the Network Computers this summer to make sure functionality is maintained in the thin-client environment.

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► For these and other related links, point your browser at www.computerworld.com/news/97021gradwell.html

► The evolution of client/server architecture: www.sping.com/ClientServer_Evolution.html

► Information systems resources: www.cba.pdx.edu/isg/is/isr/isr.html#Client

"We have some users with $4,000 or $5,000 pieces of equipment on their desk that only go into one application a day," said Gary Payne, Dunlop's systems development group leader. "They go in, do their work and get off. Those people are our initial focal point."

Payne said the Network Computer should make upgrading and deploying software packages a snap compared with the current method of individually installing them on a multitude of PCs.

But the Web-based applications aren't just for network devices. Scott Lundstrom, analyst at Advanced Manufacturing Research, Inc. in Boston, said many companies — especially those with independent distributors and remote offices — can also benefit.

"Financial modules are where many users get the benefit out of this," Lundstrom said. "They can make this [real-time financial] data available to distributors, customers and sales representatives quickly."

Beer maker Heineken USA, Inc. doesn't have any network computer aspirations yet, but it is taking advantage of Web-based applications to give its 450 independent distributors access to order information.

Heineken's distributors use Netscape Communications Corp. browsers to enter and track orders with Heineken USA headquarters in White Plains, N.Y.

The distributors access demand-chain planning software from American Software, which captures the order and makes the information immediately available to Heineken officials.

Heineken expects the system to cut lead time on deliveries from 12 weeks to four.

The system also lets Heineken turn its district managers into regional salespeople instead of order-takers, said Tom Bongiovanni, Heineken's systems manager.

Microsoft to fix Win95 laptop bugs

By April Jacobs and Mindy Blodgett

WINDOWS 95 was advertised as a plug-and-play operating system that benefits mobile users.

But users and analysts claim Windows 95 never had the true plug-and-play functionality and power management features that were promised. And that has resulted in buggy laptops.

Indeed, Microsoft Corp. has certified related bugs as problems on its World Wide Web site at www.microsoft.com. The company couldn't be reached for comment last week but said on its Web page that it is working on a fix.

Timothy Schmidt, an analyst at Encore Consulting Group, Inc. in Longwood, Fla., said one of the two most recent bugs mentioned on the Microsoft Web site involves the power management driver. The Windows 95 power management driver may not be able to handle a suspend request and may cause the computer to power-off in various situations, including when the computer is placed in its docking station and turned on.

Windows 95 also has problems with power management features in PC card modems, Chris DeVoney, a laptop tester at *Computerworld* and a syndicated columnist, said he ran into the problem when he tested a new Intel Corp. processor-based laptop from Gateway 2000, Inc. using a 3Com Corp. combination PC/modem card.

Instead of just powering-down the modem, DeVoney said, the PC card powered-down the whole system.

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Oracle8 finally taking shape

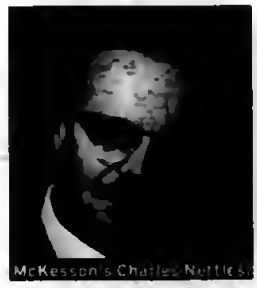
▸ *Object plans move beyond prophecy for long-awaited database upgrade*

By Craig Stedman

AFTER MONTHS of silence, Oracle Corp. is starting to firm up plans for building object technology in to its upcoming Oracle8 database, according to users and analysts who have talked to company officials.

Sources said the features Oracle is promising for Oracle8 include the ability to encapsulate business processes in objects and the ability to link objects via pointers. Along with support for nonrelational data such as text and images, that should make Oracle8 a reasonable — but less complete — response to Informix Software, Inc.'s Universal Server database, analysts said. Informix shipped Universal Server late last year.

The object capabilities of both databases are aimed at streamlining application development and supporting Internet and multimedia usage. But Oracle has been unusually secretive about the object-oriented aspects of Oracle8. Even plugged-in users said it has been hard to get commitments until recently.



Oracle appears to be "moving much closer to supporting real object capabilities" with Oracle8

Charles Nettles, director of technology at the Information Technologies division of McKesson Corp. in San Francisco, said he previously "heard a lot of equivocation" from Oracle. Oracle officials "talked objects," he said, "but they really didn't support them" in the first beta-test release of Oracle8, which went out last summer.

Nettles, who is awaiting a promised second batch of beta code, declined to comment on the specific object capabilities that Oracle officials said will be in Oracle8 when it ships in June. But he said McKesson's technicians "are much more satisfied today" about Oracle's plans.

Objects should let McKesson's business users "create a picture" of their requirements for the pharmaceutical distributor's application developers, Nettles said. That should result in software "that meets business needs instead of the fantasies of developers," he said.

LAYERS AND VIEWS

Oracle officials wouldn't comment on Oracle8. Sources said the Redwood Shores, Calif., vendor is working to include the following features in the database management software:

- A business objects layer that lets business processes be turned into objects. For example, a company could develop an object to automatically create purchase orders for users.
- Object views of relational data.
- The ability to store text, images and spatial data as large objects in database tables.
- Pointers for linking objects that depend on one another, plus some level of polymorphism so objects can be tailored for different users.

Informix's Universal Server, which supports a much wider range of complex data types, "will still be ahead of Oracle8 in terms of architectural elegance and range of functionality," said James Pickrel, an analyst at Hambrecht & Quist, Inc. in San Francisco.

But Oracle8 should have enough object technology to meet the immediate needs of most Oracle loyalists, he said.

For example, Burlington Coat Factory Warehouse Corp. wants to start moving down the object road but is primarily interested for now in other Oracle8 features, such as database partitioning and improved backup. "It's not like we're an object shop that's crying out for those capabilities," said Michael Prince, chief information officer at the Burlington, N.J., retailer.

Burlington Coat installed the first beta release of Oracle8 this month and is awaiting the second one. Oracle's object promises sound good, Prince said, "but the real question is how good a job they do on this stuff."

TopTier unveils software to access databases via the Internet. Page 53

Versant upgrade boosts performance

Versant Object Technology Corp., the most gung ho of the object database vendors at targeting corporate applications, this week plans to introduce a new version of its software geared toward better performance and scalability.

Versant Release 5.0 adds full support for multiprocessing and multithreading, said officials at the Menlo Park, Calif., company. Database clients set up as application servers in three-tier environments also can now run multiple user sessions simultaneously.

Faced with the installed might of relational software, most object database vendors have turned to the Internet or specialized applications. But Versant "is trying to scale up to handle more transaction processing," said Joshua Duhl, an analyst at Stillpoint Consulting in Cambridge, Mass.

Object/relational hybrids emerging from database heavyweights such as Informix Software, Inc. and Oracle Corp. pose another potential hurdle for pure object databases. The hybrids help legitimize objects, but they could push Versant and its peers into "very complex applications that just have to be done in an object database," Duhl said.

WebFlow Corp. in Santa Clara, Calif., built an Internet-enabled document-management groupware product on top of Versant's database and is beta-testing Release 5.0. Using relational software would have required "performance-prohibitive" data joins, said Roland Crunk, director of open systems development at WebFlow. Versant's new release should eliminate the need to manually manage the process of running data requests from multiple users at the same time, he added.

The upgrade will ship in May, with prices starting at $2,150, Versant officials said. — Craig Stedman

Visa in court battle over debit-card software

▸ *Trade secrets at issue as employees switch firms*

By Robert L. Scheier

VISA U.S.A., INC. and a credit-card transaction processing company are in court battling over whether Visa tried to steal trade secrets by hiring seven information systems professionals from the processing company.

Those trade secrets, claims Milwaukee-based Deluxe Data Systems, Inc. (DDS), include information about software that DDS has been developing for Visa. The software would let the credit-card giant process transactions involving debit-cards.

The DDS lawsuit, filed Jan. 17 in Milwaukee County Circuit Court, seeks to permanently block any of the seven employees from helping Visa develop debit-processing software. If Visa had such software in-house, it could perform the transactions itself without relying on outside providers such as DDS, Visa officials said.

DDS so far has won a temporary restraining order blocking such work. Hearings were held last week on whether to make the order permanent.

Officials at DDS and the company's lawyers weren't available for comment. Visa officials have said DDS' claims "lack merit." In a counterclaim, Visa charged that DDS had threatened to sue several employees who said they were leaving to join Visa. Visa also charged that DDS had failed to supply all the software and services it had promised to Visa, although Visa has paid DDS $6.5 million for the work.

Visa claims that a software licensing agreement between it and DDS gives Visa the right to use DDS' Advantage software to offer debit-processing services.

"Visa had viewed that licensing agreement as an alliance with [DDS] that would provide Visa's member financial institutions with enhanced processing capability for Visa check cards and other debit-processing services," said a Visa spokesman.

That agreement, by letting either Visa or DDS use Advantage to offer debit-processing capabilities to the market, would provide "financial institutions with two strong processing alternatives," the spokesman said. "We are disappointed that [DDS] has taken this action, which may impede both Visa and [DDS] from achieving that goal."

Web site reviews: What's the best airline online?

Way-cool technology alone isn't enough to make a first-class commercial Web site. The sites that soar above the rest make it easy for customers to do business online. Among airlines, at least, the best sites aren't always from the biggest companies, as *Computerworld* found in the first of a new series of Web site reviews.

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FLEXIBILITY NEEDED: Guy Hollingbury wants flexibility in Web query tools. Software, page 53

GETTING THERE: Videoconferencing is snazzier but not top-notch yet. Buyer's Guide, page 81

BROAD BRUSH: New jobs will evolve in response to IT, Terry Winograd says. In Depth, page 85

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Clone makers hunger for PowerBook licenses

By Lisa Picarille and Mindy Blodgett

AS APPLE COMPUTER, INC. tries to jump-start a financial turnaround by selling a new line of PowerBook portables, the company may face increased competition from its own licensees.

Although Apple has yet to grant a license to make Mac OS-based portables to any of its current Mac OS licensees, sources said Motorola Computer Group in Tempe, Ariz., and Power Computing Corp. in Round Rock, Texas, are champing at the bit to become the first to offer users Mac OS-clone notebooks.

Meanwhile, Vertegri Research Corp in Vancouver, British Columbia, last week said it would deliver in April the first fully licensed Macintosh portable using a Motorola motherboard. Vertegri's first models will use a 200-MHz PowerPC 604E chip and cost between $4,987 and $6,973.

Vertegri was able to make the portables because Apple granted two vendors — Motorola and IBM — permission to sub-license Macintosh-compatible motherboards to other vendors.

MORE CHOICES

The activities mean better selection and potentially lower prices for laptop users seeking Macintosh-compatible models.

Paul D. Camp III, vice president of information systems at Avis, Inc. in Richmond, Va., said he would welcome more choices among Macintosh-compatible notebooks.

"I think that other vendors might be able to offer a sort of stripped-down version for much cheaper than Apple," Camp said.

Industry watchers said Apple has been hesitant to grant notebook licenses because it allowed its lucrative PowerBook line to languish in the past year — at a time when demand for portables skyrocketed.

MARKET MUSCLE

Timothy Schmidt, an analyst at Encore Consulting Group, Inc. in Longwood, Fla., said if Apple would license the Mac OS for laptops, "it would be a smart move for Apple . . . you are expanding the market multiple times."

Motorola reportedly is closer than Power Computing to becoming an official licensee from Apple.

Sources close to Motorola and Apple said the two are hammering out a licensing agreement. A deal would give Motorola its first entry into the notebook field.

Motorola couldn't be reached for comment.

If Motorola gets a licensing agreement, it will enter an unfamiliar market, said Tim Bajarin, an analyst at Creative Strategies, Inc. in San Jose, Calif.

"[Motorola doesn't] understand how to sell hardware like laptops effectively," Bajarin said. "To succeed in the cut-throat laptop world, you have to be a good marketer."

WHERE APPLE FELL IN Q4 1996

Laptop rank	Vendor	Laptop shipments
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2	IBM	215,000
3	Compaq	190,000
10	Apple	35,000

Source: International Data Corp., Framingham, Mass.

Correction

Due to a reporting error, the chart in "Internet funds off to quiet start" (CW, Nov. 4), incorrectly stated the performance of the WWW Internet Fund and NetNet Fund. They should have shown 5.2% and 28.6% growth, respectively. Also, due to an editing error, the uniform resource locator for the Munder Capital Management NetNet Fund was incorrectly listed. The address is netnet.munder.com.

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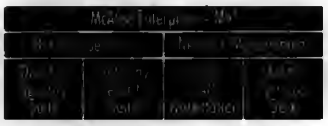

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E-MAIL BOMB ATTACKS

Date	Target	Result	Method
Sept. 1996	Public Access Network	Service disrupted for days	Repeated connection requests
Dec. 1996	Web Communications LLC	Service outages over 2 days	Repeated connection requests
Feb. 1997	Congress	No significant disruptions	E-mail barrage

E-mail attacks can clog systems

▸ *Security expert warns of Internet vulnerability*

By Sharon Machlis
NEW YORK

AN "E-MAIL BOMB" attack on Congress that sent hundreds of threatening messages around Capitol Hill this month turned out to be little more than a nuisance.

But a speaker last week at the International Banking & Information Security Conference here warned that the Internet is inherently vulnerable to hackers who bring down systems by bombarding them with so much data that legitimate transactions grind to a halt.

INTERNET SECURITY

"We do not know how to defend against this," said Winn Schwartau, president of Interpact, Inc., a consulting firm in Seminole, Fla., and author of *Information Warfare: Chaos on the Electronic Superhighway*. "Surviving denial of service on the Internet is becoming increasingly crucial."

"This is a worrisome concern," said Dan Schutzer, vice president and director of advanced technology at Citibank in New York.

Schwartau outlined a potential defense that combines detection modules, dynamic reaction tools and an "alternative control channel" to go around a clogged TCP/IP connection that is under attack. A rudimentary prototype based on this theory may possibly be ready for testing in six to nine months, he said.

Meanwhile, hacker sites on the World Wide Web offer anonymous mail bombing services — just enter the site you want attacked and how many messages you want sent there — as well as the "Ping O' Death Page," which details the vulnerabilities of various operating systems, Schwartau said.

The Internet is susceptible to various data-flood attacks because information and control are on the same channel, Schwartau said. He suggested using "smart" detection modules that recognize if too many electronic-mail messages or pings are coming in, reaction modules that set filtering based on activity being detected and an alternative channel between customers and their service providers (perhaps dial-up cellular modems) to deal with an attack.

DAMAGE CONTROL

The recent E-mail threats in Washington claimed that a group of cyberpunks would wipe out all files on the congressional computer systems. In fact, no systems were breached, and no damage was done, said David Sandretti, communications director for Sen. Barbara Boxer (D-Calif.). Boxer's office received more than 200 threatening messages during Presidents Day weekend.

The message volume didn't cause any problems, Sandretti said. But if there had been hundreds of thousands of such messages instead of merely hundreds, the system could have been clogged.

"That is something we're concerned about," Sandretti said. "It's unclear what we can do at this point except continue to be vigilant."

Cabletron to rev up switch

By Bob Wallace

CABLETRON SYSTEMS, INC. this week will unveil a five-slot SmartSwitch that delivers the features and performance of its highest-end data center switch in a smaller and less expensive system, *Computerworld* has learned.

Users will get high-performance (more than 2 million packet/sec.), high-density LAN switching (120 switched Ethernet ports) and Cabletron's SecureFast virtual networking, all for less than $330 per port, said sources briefed by the vendor.

The SmartSwitch was designed to stave off attacks from Cisco Systems, Inc.'s Catalyst 5000 switch, analysts said. It is targeted at Cabletron's installed base of 100,000 midrange MMAC hub users who want to move to high-speed LAN switching but can't afford the MMAC-Plus data center switch.

Sources said final pricing hasn't been set, but the SmartSwitch will cost less than the Catalyst 5000. And it is far more powerful, they said — a 3.2G bit/sec. backplane compared with the Catalyst 5000's 1.2G bit/sec. backplane.

"This sounds like a switch we could use when we move engineering departments off-site," said Marc Sayer, a senior network systems engineer at printing-press maker Heidelberg Harris, Inc. in Dover, N.H.

"There's definitely a market for this product, since users have situations where they want the benefits of a high-end switch but want something that's less expensive," said Phil Thorson, a senior systems analyst at St. Cloud State University in St. Cloud, Minn.

CABLETRON'S SMARTSWITCH

Chassis: Five slots

Backplane: 3.2G bit/sec.

Processing power: More than 2 million packets per second

Interface cards: 24 switched Ethernet and two switched Fast Ethernet ports, or 24 switched Ethernet and one 155M bit/sec. ATM ports

Price: Less than $330 per port

TWO INTERFACES

The SmartSwitch is available with at least two interface cards. One card has 24 switched Ethernet ports and two switched Fast Ethernet ports. Another has 24 switched Ethernet ports and at least one 155M bit/sec. Asynchronous Transfer Mode (ATM) port, sources said.

A fully configured system can support 120 switched Ethernet ports and 10 switched Fast Ethernet ports. The Catalyst 5000 can support a maximum of 96 switched Ethernet ports.

Cabletron plans to announce additional interface cards this summer and toward the end of the year, according to sources. The internetworking giant also plans to gradually scale up the new system's 3.2G bit/sec. backplane by a factor of three, sources said.

A key feature supported on the SmartSwitch is Cabletron's SecureFast Virtual Networking. It allows network administrators to set policies or privileges that remain the same for end users regardless of where they plug in to the network.

Cabletron officials confirmed their plans to make a major switching announcement this week but wouldn't provide details.

Digital chip pumps up midrange AlphaServer lines

By Jaikumar Vijayan

DIGITAL EQUIPMENT CORP., fighting sluggish sales, last week boosted its midrange AlphaServer line with a faster processor and more expandability.

The Maynard, Mass.-based company added its high-end 64-bit, 466-MHz Alpha chip to the midrange AlphaServer 4000 and 4100 lines. The company also introduced a 64-bit Peripheral Component Interconnect I/O expansion option that lets users double the I/O capacity and bandwidth of AlphaServer 4000 models, Digital officials said.

The new capabilities boost system speed and increase system throughput, analysts said.

This is Digital's second major Alpha-related announcement in less than three months. In one of the industry's biggest pricing moves, Digital rolled back prices by up to 46% across the entire AlphaServer line in December.

64-BIT ALPHA SYSTEMS

Alpha revenue

1993	$300M
1994	$1.7B
1995	$3.2B
1996	$4.8B
1997*	$5.8B

*Projected

Source: Aberdeen Research, Phoenix

Both announcements are being perceived as increasingly urgent attempts by Digital to reenergize suddenly slowing Alpha server sales. After growing at a fast clip for nearly three years (see chart), Digital's Alpha revenue has slowed somewhat in the past few months.

In fact, revenue from Alpha sales in the last quarter grew by just 1% over the same period in the previous year.

Capabilities such as Very Large Memory — a top-end server can support up to 28G bytes of RAM — have made the systems popular in the database and online transaction processing markets. The servers support Windows NT, Open VMS and Unix.

"Overall, Alpha servers as a technology are top of the line," said Bob Djurdjevic, editor of the "Annex Report/" a newsletter in Phoenix. "But increasingly, corporations have had to balance that fact with Digital's dropping image" as a top-tier vendor, he said.

"We are getting increasingly wary about Digital," agreed Fernando Yson, systems manager at Cost Care, Inc. in Huntington Beach, Calif.

"On paper, at least, they are far ahead of the competition in performance, but they're no longer considered a top-tier vendor. And that is a major stumbling block for us," he said, as Digital's Unix is a low priority for application developers.

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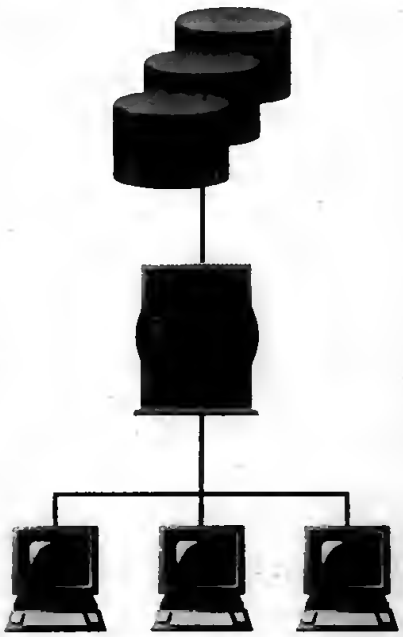

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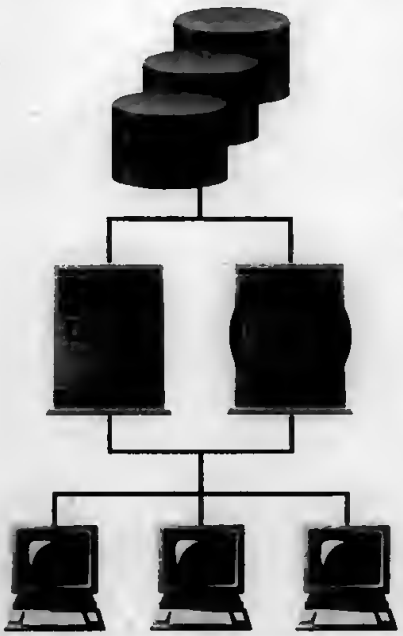

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Security flaws force Microsoft to get Active

▸ *Dangers of rogue ActiveX components have developers fearing component technology*

By Sharon Gaudin

MICROSOFT LAST week moved to allay developers' fears after a group of German hackers built a rogue ActiveX component that reportedly can steal money from unsuspecting users' bank accounts.

Microsoft Corp. posted a new section on its World Wide Web site (www.microsoft.com/security) to answer developers' questions about how to safely handle components. The vendor sent out a similarly focused letter from a top executive to members of the Internet Explorer community.

Those efforts came a few weeks after Computer Chaos Club, a hackers' organization in Hamburg, Germany, demonstrated an ActiveX component designed to invisibly download onto client machines while users were viewing a Web page using Microsoft's Internet Explorer 3.1.

The component runs automatically and could transfer money into the hackers' accounts from the accounts of anyone who used Intuit, Inc.'s Quicken financial software to pay their bills electronically.

The Chaos Club demonstration jostled the sleeping beast of component security and reminded users about the dangers of downloading hostile components that can breach the security of corporate networks.

"I don't think [Microsoft's Authenticode] is robust enough to be meaningful."

"You've got to be careful," said Patrick Connolly, president of InvestorsEdge, a San Francisco-based online investment firm. "What's so cool about ActiveX is that it can do so much. It's really, really powerful. So you can build cool applications, or it can trash your whole system. Power goes both ways."

ActiveX components are small Microsoft programs that can be downloaded off the Internet and run within a Web browser. Hackers have focused much of their attention on ActiveX — rather than on Sun Microsystems, Inc.'s Java — because ActiveX components have access to a computer's operating system and Java applets don't. That gives ActiveX much more power to build and to destroy.

MAJOR DAMAGE

Late last summer, Microsoft announced it was working to tighten ActiveX security after a developer demonstrated a hostile component that could shut down a computer. A well-built hostile component could reformat a computer's hard drive or start a video camera program.

Tom Johnston, a group product manager at Microsoft, said the authentication coding built in to Internet Explorer wouldn't have allowed users to download the rogue Chaos Club component. Microsoft's Authenticode requires that a component be signed by a registered developer before it can be downloaded. The developer in the Chaos Club isn't registered, Johnston said, so the component wouldn't have been accepted into the browser.

But Frank Manci, a network technical manager at Colonial Savings F.A., a mortgage loan company in Fort Worth, Texas, said he doesn't trust Authenticode to keep out a hacker who is intent on getting in.

"These hackers are top-notch, unfortunately," Manci said. He added that someone could create a false identity under which to register. "No, I don't think [Authenticode] is robust enough to be meaningful. There are people who devote their whole lives to making problems."

SHORTS

Sun Java kit piques Microsoft

Microsoft Corp. was in a lather last week over the latest release of Sun Microsystems, Inc.'s Java Development Kit, which added an interface specification for developers. Sun has asked its licensees, including Microsoft, IBM, Hewlett-Packard Co. and Apple Computer, Inc., to keep their current implementations but add the new interface. Microsoft, which has its own version of the interface, complained that Sun's move disenfranchises Windows users. Sun officials responded that Microsoft is the only vendor complaining and that the impact on corporate developers is limited. They also said reports about Microsoft suing over the dispute are incorrect.

Teens crack Air Force system

Three high school students in Croatia recently gained access to an unclassified computer network at Anderson Air Force Base in Guam, confirmed U.S. Air Force Capt. Keri Humphrey last week. The break-in came to light in the Croatian newspaper *Vecernji List*, which quoted the youths as claiming to have tapped in to classified information. But Humphrey said no classified systems were involved and damage "isn't significant."

Borland lays off 300

Borland International, Inc. in Scotts Valley, Calif., last week announced a restructuring move that entails laying off 30% of its global workforce, or 300 employees. The move is intended to return the beleaguered company to profitability by next year. Delbert Yocum, the company's recently appointed CEO and chairman, said the restructuring is expected to save the company $60 million annually.

Banks eye outsourcing

The Federal Reserve Board last week approved rules that will make it easier for banks to offer new products and speed up mergers. Under the new rules, scheduled to take effect April 21, up to 30% of a bank holding company's total revenue can come from nonfinancial data processing. As a result of the rules, analysts expect banks to offer outsourcing services for noncore operations, such as accounts-payable processing, to their corporate customers.

HP profits rise 15%

Hewlett-Packard Co. last week exceeded Wall Street forecasts in announcing profit of $918 million on revenue of $10.3 billion for the quarter ended Jan. 31. That was up 15% over the earnings of $790 million on revenue of $9.3 billion in the same period a year earlier. HP officials also said the company would acquire the networking business unit of Symantec Corp. The deal, valued at $30 million, will let HP expand its OpenView enterprise management framework to workgroups.

CompuServe posts loss

CompuServe Corp. reported a loss of $14.2 million for its most recent fiscal quarter. Also, Robert J. Massey has stepped down as president and CEO. Massey, 51, held the top spot at CompuServe for less than two years. He said he was leaving the company to pursue other interests. CompuServe also reported it lost 100,000 members during the quarter, putting membership at just less than 2.9 million.

Centennial seeks turnaround

Centennial Technologies, Inc., a Billerica, Mass.-based maker of memory cards, hired a turnaround specialist last week to help it recover from its financial woes. CEO Emanuel Pinez was fired after the board of directors uncovered questionable accounting records. The Federal Bureau of Investigation later arrested Pinez on charges of insider trading and manipulating financial records. Centennial stock plunged and may be yanked off the New York Stock Exchange. Centennial is expected to restate its results for fiscal 1996 and half of 1997.

Losses mount at SSA

System Software Associates, Inc., a Chicago-based client/server software vendor, posted a net loss of $4.4 million in its first quarter ended Jan. 31, compared with a loss of $400,000 in the same quarter the previous year. Company officials blamed the loss on a $3 million hike in research and development and other increases in spending. Revenue was $92.2 million, up 20.4% from $76.6 million a year earlier.

Open Market buys Folio

Open Market, Inc. in Cambridge, Mass., last week said it plans to buy Folio Corp. for $45 million in equity and cash. Folio makes electronic information-publishing software. Open Market makes software to govern transactions on the Internet, such as sales, checking documents in to and out of databases and controlling log-ins to secure World Wide Web sites. Folio is owned by Reed Elsevier PLC in London.

Lotus to ship SmartSuite 97

Lotus Development Corp. is expected this week to ship an updated version of its productivity suite. SmartSuite 97 for Windows 95 and Windows NT 4.0 features new tools for collaboration, enhanced Internet facilities and, finally, a 32-bit version of Lotus' 1-2-3 spreadsheet application. The suite will ship with Microsoft's Internet Explorer and Netscape Communications Corp.'s Navigator. The price will be $399.

SHORT TAKES German software giant SAP AG said last week it is integrating its R/3 application package with design, procurement and engineering software from Aspect Development, Inc. in Mountain View, Calif. ... Digital Equipment Corp. last week announced it is setting up an independent company called Tracepoint Technology, Inc. to produce software development tools for Windows 95 and Windows NT operating systems.

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DISASTER RECOVERY

Cheyenne rides to Windows NT's rescue

By Patrick Dryden

THE CHEYENNE DIVISION of Computer Associates International, Inc. last week struck an alliance with Microsoft Corp. to provide the first disaster recovery disk and directory manager for the Windows NT operating system.

Now, managers of Windows NT systems can get a free "rescue disk" to help them reduce the steps required to restore a failed server or workstation.

"Bootable rescue disks" aren't new. But this one is significant because it should become "the normal way to recover NT systems in the future," and it links with an enterprise manager, said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif.

Users also can look forward to a management tool that promises to ease daily administration tasks for organizations that implement the Active Directory in Windows NT 5.0, which is due in the second half of this year.

CA officials said they will link both products to their Unicenter systems management suite so central managers can extend their reach across an enterprise to maintain remote Windows NT systems and users.

BIG HELP

"This is the first NT recovery disk I've seen, and I want it so I can quickly restore backup tapes for 50 servers in my area," said beta tester Alan Young, a principal network engineer at Science Applications International Corp. in San Diego. The consulting service was contracted by a federal agency.

Cheyenne Disaster Recovery for Windows NT is a disk set that stores essential hardware and operating system configuration information and provides "wizard" programs to automate all the steps required for basic recovery.

This year Windows NT will take over as the most popular corporate desktop operating system, according to a survey of 250 client/server implementers by Business Research Group in Newton, Mass.

Then a server technician or a station user can restore applications and data from backup tapes — those created by Cheyenne's ARCserve or those created by any vendor's software that writes to the Microsoft Tape Format (MTF).

However, the tool is limited for other products, Young cautioned. ARCserve automatically restores user rights to NT File System volumes, but recovery from MTF products requires manual steps, he said.

This recovery software is free through April 1; after that it will cost $395.

CA's Unicenter also will let central operators manage directory structures for Windows NT and Novell, Inc. NetWare networks through upcoming versions of the DS Standard tool. The Cheyenne division, located in Lake Success, N.Y., recently took over this technology by acquiring Preferred Systems, Inc. in Stamford, Conn.

DS Standard lets managers manipulate the structure and user privileges of Novell Directory Services in NetWare 4.x off-line, so they can automate changes and implement them quickly.

For example, at Northeast Utilities, DS Standard helped managers model their directory structure when they first migrated to NetWare 4.0 to make sure it worked right, said Brice Burtch, a senior networking administrator at the utility in Berlin, Conn.

"Now we use it to work off-line and make changes in an hour that would take a week to implement for 3,300 users," Burtch said.

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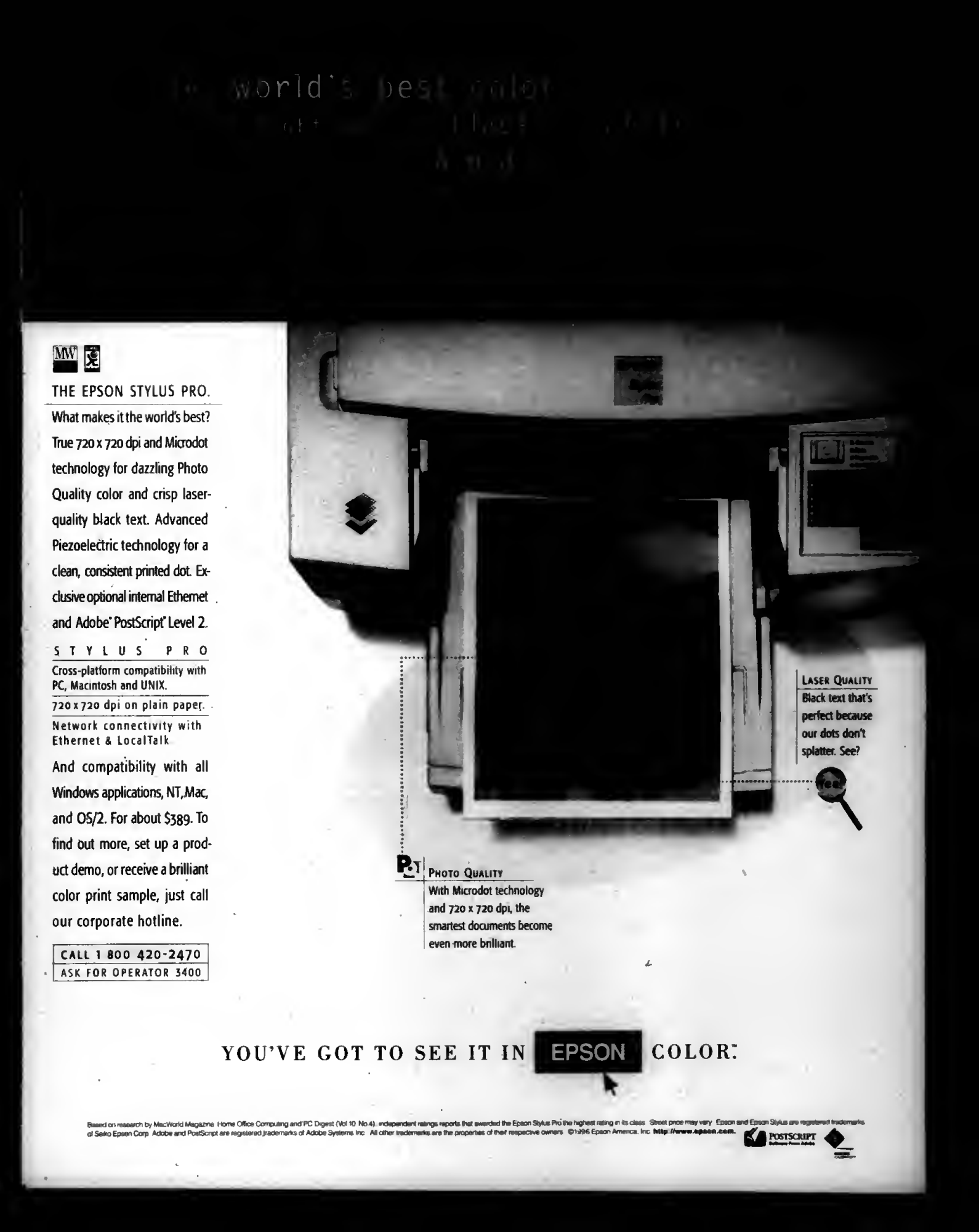
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POSTSCRIPT

Newbridge lays out path for UB users

▸ *Vendor plans better routing, loses Cisco deal*

By Bob Wallace

FRESH FROM its acquisition of UB Networks, Inc., Newbridge Networks, Inc. next month will detail plans to offer users greatly expanded network management coverage and advanced routing features.

But the hordes of new Newbridge users will lose something in return: Cisco Systems, Inc., which users and analysts say now views Newbridge as a competitive threat, is canceling a key resale deal with UB, *Computerworld* has learned. Cisco officials didn't comment.

VENDOR STRATEGIES

Newbridge plans to extend UB's popular NetDirector World Wide Web-based network management tool to cover UB's low-end stackable hubs as well as most, if not all, Newbridge networking products.

Herndon, Va.-based Newbridge also plans to soup up the performance of UB's high-end GeoLAN 500 hub by gradually adding routing functionality to the box, thus making it a Layer 3 switch.

"Extending NetDirector to lower-level UB hubs and Newbridge devices is important because it means we only need one network management system to handle both product lines," said Virgil Palmer, manager of telecommunications research and engineering at Air Products and Chemicals, Inc. in Allentown, Pa., a longtime UB customer.

"That saves us a great deal in terms of buying another package as well as in labor and training. Our technicians don't have to learn a second system," Palmer said.

PLAN FOR THE FUTURE

UB users said they welcomed Newbridge's plan to add Layer 3 switching functionality to the GeoLAN 500.

"We're quite pleased and well-served by our router infrastructure today, but it's important to know that Newbridge has that intention when it comes to planning the future of our network," said Richard Wells, director at Geisinger Health System in Danville, Pa., an operator of two hospitals and 70 medical clinics statewide.

Other UB users agreed.

"Layer 3 switching is where the LAN switching industry — and users — are headed," said Tom Shoop, director of systems engineering at Western Union Corp. in Paramus, N.J. "This is a very pleasing and positive approach for Newbridge."

CISCO CONCERN

But UB users expressed concern about Cisco's decision to stop UB from reselling products that use its Internetwork Operating Software (IOS) router code.

Router market leader Cisco made the move because it views Newbridge as a rival following its UB purchase.

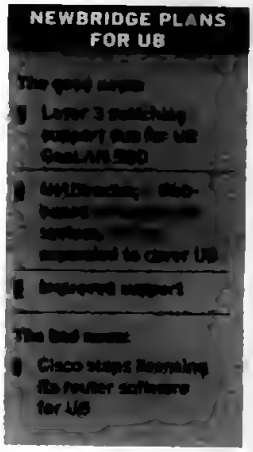
The decision came just several months after Cisco stopped licensing IOS to Cabletron Systems, Inc.

Because of a Cisco decision, UB won't be able to resell products that use IOS, such as plug-in hub modules and stand-alone routers.

UB users can choose to buy from Cisco or migrate to Newbridge's routing system.

"It's not pleasant for us, but we're really not left totally out in the cold," Wells said.

"What this means is that now I'll have to deal with two vendors instead of one for my internetworking needs, which is more difficult," he said.



Cisco's decision raises questions about its longtime efforts to establish IOS as the de facto router software standard.

"Cisco is really painting IOS into a corner by yanking licenses from the vendors left that use it substantially," said John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass.

"It's not a de facto standard," Morency said.

More layoffs imminent at austere Apple

By Lisa Picarille

ANOTHER TOP executive resigned from Apple Computer, Inc. as the company last week steeled itself for March layoffs that analysts and insiders said could cut Apple's workforce by as much as 30% to 40%.

Apple officials declined to comment on the scope of layoffs, noting that they were evaluating all positions and that layoffs should be announced next month.

The company has 13,398 employees. Apple laid off more than 1,800 people last year.

"Are cuts of more than 30% adequate? Yes, but only assuming that Apple can stabilize revenues," said Charlie Wolf, an analyst at CS First Boston Corp. in New York.

"Apple is back on the hardware side with a slew of product announcements, but they have to convince people to buy Macs and that the viability of the company and the platform are no longer issues," Wolf said.

Apple lost more than $800 million in fiscal 1996.

David Wu, an analyst at The Chicago Corp., another investment banking firm in New York, agreed. "They need to get back customer confidence. The rest is just bullshit," he said.

KEEP CUTTING

The layoffs are a key component of Apple's plan to cut operating expenses by 20% to reach a break-even point of $8 billion, down from previous break-even projections of $9 billion. Apple's 1995 revenue was more than $11 billion.

But several financial analysts said the break-even point should be even lower. "I think they're shooting for $7 billion to $7.5 billion. That's a more realistic number," Wu said.

In the latest in a string of departures, Marco Landi last week announced he is leaving Apple. Landi was appointed as vice president of worldwide sales in the latest reshuffling.

Sources close to Apple said Landi was unhappy about his new responsibilities, which were perceived by many as a demotion from his previous duties as chief operating officer.

OPERATING SYSTEMS

Motorola snubs NT, picks BeOS for its Mac clones

By Lisa Picarille

JUST TWO MONTHS after deciding not to bundle Windows NT on its PowerPC-based systems, Motorola Computer Group last week said it will instead ship its line of Macintosh-compatible systems with Be, Inc.'s BeOS.

During the past year, industry watchers predicted that NT running on the PowerPC could save of the PowerPC platform, which is facing an uphill battle against machines that use chips from Intel Corp.

Flying in the face of conventional wisdom, Motorola said it is betting on an alternative to NT on the PowerPC.

Motorola, which last week demonstrated the BeOS operating system running on its StarMax systems at Macworld Expo in Japan, will continue to preload its systems with the Mac OS.

But the company also plans to ship the BeOS with all StarMax 3000 and 4000 systems.

The BeOS will be shipped as a separate CD-ROM, which will give users an alternative operating system, according to Motorola officials.

"With the BeOS running on more clones, I would be very much interested in looking at [them]"
– David Champney, Baltimore Symphony Orchestra

Together with IBM, Motorola earlier announced it would stop developing new PowerPC machines that use Microsoft Corp.'s rival NT operating system. In turn, Microsoft said it will drop development of NT for the PowerPC chip.

While the vendors play tit for tat, Motorola's embrace of Be has some Macintosh users pleased.

One user at an almost all-Macintosh site said the more choices the better.

He said having the BeOS available on Macintosh clones gives him another reason to more carefully consider purchasing one

"The Mac OS is old and needs replacing," said David Champney, computer systems manager at the Baltimore Symphony Orchestra, which has more than 65 Apple Computer, Inc. Macintoshes.

"With the BeOS running on more clones, I would be very much interested in looking at the clones but would have to consider compatibility for existing software applications, because we are heavily invested in some [of them]," Champney said.

Charlie Wolf, an analyst at CS First Boston Corp., a market research firm in New York, called the bundling deal with Motorola a coup for Be.

But Wolf said until there is more software running on the BeOS, the impact on users will be minimal.

Several major software developers, including Adobe Systems, Inc. and Macromedia, Inc., have announced plans to develop BeOS versions of their popular applications.

To address those and other concerns, Be last month announced it would halt development on its proprietary BeBox hardware to wholly concentrate on its BeOS.

Be in November announced a deal with Power Computing Corp. to bundle the BeOS on all its Macintosh clones.

Power Computing has an exclusive bundling deal for the BeOS through the end of the first quarter.

After that, Motorola will begin bundling the BeOS.

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Benefits of global telecom reform are still a long distance away

By Kim Girard

GLOBAL telecommunications competition will change international networking forever, but telecommunications managers shouldn't expect to reap the benefits of better service and lower bills for at least several years, analysts said.

A year after the U.S. enacted landmark legislation that opens local and long-distance markets to competition, 68 countries that represent 90% of the $600 billion worldwide telecommunications market have agreed to open their markets as well, ending state-owned telephone monopolies by 2000.

Lifting restrictions overseas should drive down prices and enhance value-added services — such as three-way conferencing that many users abroad currently can't use, said Ronald West, president of the Communications Managers Association, a user group in Morristown, N.J.

In fact, telecommunications analysts predicted open global competition could eventually reduce long-distance costs by as much as 80%.

BIG IMPACT

"I think [the agreement] will impact us quite a bit," said David Havu, telecommunications coordinator at Cole-Haan Corp. in Yarmouth, Maine. Havu said the shoe manufacturer has held off on building an international network because of the cost. He said the company now spends $12 to $15 on a 10-minute call to India and $2,000 to $3,000 each month to send faxes to overseas offices. He said he hopes those costs will plummet.

But West said the reforms aren't going to come about overnight.

"If we thought it was difficult to get the domestic carriers to work together, it's going to be 10 times more difficult to get countries and companies with different laws and cultures to work together," said Jeffrey Kagan, president of Kagan Telecom Associates in Atlanta.

The pact will particularly benefit those that transact business in Asia and Latin America, where infrastructure lags, data services can be difficult to find and telephone lines are sometimes viewed as luxuries rather than necessities. Services such as frame relay are often unavailable, which forces network managers to rely on the ubiquitous — but slower — X.25 packet-switching technology.

HEARD 'ROUND THE WORLD

What to expect from the global telecommunications market over the next five years:

- Better-managed end-to-end network services
- Less expensive international calls and data services
- More providers to choose from
- More services in Asia, Latin America and other underdeveloped areas

James Harris, telecommunications director at Warner-Lambert Co. in Morris Plains, N.J., said any opportunity online providers have to expand will help save money. Harris said the pharmaceutical firm finds it particularly difficult to do business in Thailand, Pakistan and India.

NODELESS

"Because of regulations, it's hard for CompuServe [Corp.], Infonet Services Corp. and other companies to install nodes in these countries. So our affiliates dial in [to our network], and the cost is very high," Harris said.

Dan Taylor, a senior analyst at Aberdeen Group, Inc. in Boston, said he expects many smaller and more-nimble network providers and carriers to go international, which would create competition that will lower prices and create better service guarantees.

For network managers, those small companies — though not necessarily as reliable — will create alternatives to giants such as AT&T Corp., MCI Communications Corp. and Sprint Corp., which are all saddled with legacy systems that can slow down ordering and provisioning of services, Taylor said.

"Tell [the major carriers that] another telco can provision a T1 in 10 minutes, and that's what they'll sweat about," he said.

• E-mail recipients get URLs of large, complex files

Web used to distribute documents

By Mitch Wagner

TUMBLEWEED SOFTWARE Corp. next month plans to unveil software that exploits Internet E-mail and the World Wide Web for reliable distribution of big documents.

The Posta software is used for sending large, complex documents that are now sent by fax, overnight delivery, mail or courier, said Jeff Smith, CEO of Tumbleweed in Redwood City, Calif. Examples include high-priced industry newsletters and legal documents.

Ordinary electronic mail is often impractical for sending those documents, because the electronic formatting commands make file sizes very large, and data transmissions are often slow.

Using Posta, the recipient gets an E-mail message that contains a uniform resource locator (URL) pointing to the document being distributed. If there are multiple recipients, each one gets a different URL to retrieve the document, which lets the Posta server track when each person looked at it.

One alternative to Posta would be to post the document to the Web manually and send E-mail notification. But Posta software automates both chores, Smith said.

Posta is pretty handy, said beta user Chris Cheney, a product manager at Merrill Corp., a legal and financial printer in St. Paul, Minn. The company plans to use Posta to distribute electronic copies of documents to its clients for proofreading prior to final printing.

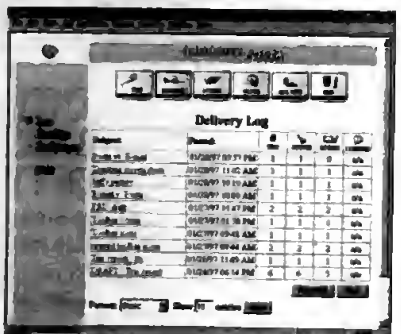
The documents are currently sent by mail, overnight delivery or courier on diskettes — and the files often span multiple diskettes.

"This would give us another option to offer our clients and shorten proofreading cycles," Cheney said.

James Loadholt, an Internet services specialist at Bowne Business Communications in Secaucus, N.J., is testing Posta for similar purposes. He said the product could save his company and its clients considerable time and money, but he also pointed out some limitations that chafe.

The Web addresses Posta uses are long and unwieldy and contain many characters that appear random to human eyes, Loadholt said. That means the only way to distribute those addresses is by E-mail, because they are too cumbersome to type in manually.

The software will go into a free public beta release on March 10 and become generally available in April. Posta will cost $189 per user. Each user can send documents to an unlimited number of recipients.



Posta software automatically converts documents to Hypertext Markup Language, Adobe's Acrobat or Tumbleweed's Envoy format

Sun tweaks Java, but faster version in works

By Sharon Gaudin

SUN MICROSYSTEMS, Inc. is offering a minor boost to its Java Development Kit now, but it promises significant speed increases in the near future.

Sun released Version 1.1 of its Java Development Kit last week, tweaking its Abstract Window Toolkit and adding international language support and the ability to create JavaBeans — reusable, cross-platform chunks of software that fit Sun's Java-based architecture.

Users and analysts called the release an incremental update that provides some fixes and enhancements but doesn't offer a significant jump in performance. Sun promised that technology from its purchase last week of LongView Technologies LLC, also known as Animorphic Systems, will translate into significant increases in Java speed.

Animorphic, in Palo Alto, Calif., a seven-person operation without a commercial product, specialized in interpreted language performance.

Sun officials didn't say how the company would use Animorphic's technology, but they said it would add it to the Java Development Kit and JavaBeans to boost Java's speed. Details are expected at Sun's JavaOne conference in April.

"Obviously, the speedier the Java programs execute, the better it will be," said Stephen Blaha, president of Bali Software Ltd., a development firm in Derry, N.H. "They keep promising us that Java will get faster and faster, reaching the performance characteristics of C++ or C. If it does, you'd see massive amounts of programming done in Java, because it's much easier to use."

Blaha said Sun made some much-needed improvements in the latest release of its Java Development Kit. He said the addition of pop-up menus, support for animation and multimedia functions, and the addition of global language support will make developers' jobs easier.

But he said the Abstract Window Toolkit, a set of onscreen Java components that include buttons, menus and text areas for user interfaces in applications, still has several bugs.

Visix's development software may help Java crack the enterprise. Page 55

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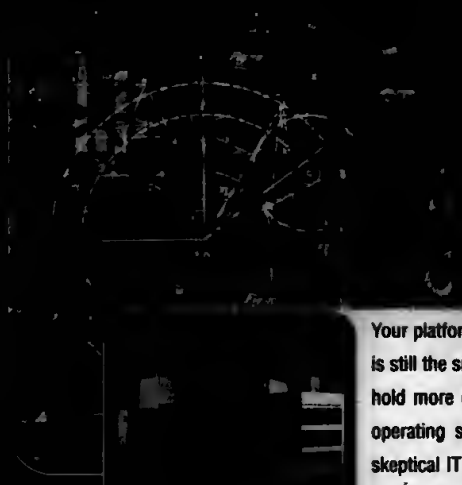

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Project management

CONTINUED FROM PAGE 1

an estimated $145 billion last year, companies can no longer afford not to heed project management's demands.

"Companies do seem to be learning their lesson," said Jim Johnson, chairman of The Standish Group in Dennis, Mass., which conducted the survey on project failures. "They're beginning to see that experienced project managers produce better projects."

"They're also talking about how and why projects fail, which used to be a real taboo subject," Johnson added.

NCR Corp. is a prime example. Among other things, the company has set up a formal career path for IS project managers, who also are encouraged to earn a graduate degree and certification in the discipline, according to Mela Walker, an Houston-based engagement manager at NCR.

IS OVERKILL
45% of software functions are never used
19% are rarely used
16% are sometimes used
13% are often used
7% are always used
Base: 360 Fortune 500 companies
Source: The Standish Group International, Inc., Dennis, Mass.

The company has adopted a standard set of project management techniques for IS managers to follow.

Georgia-Pacific Corp. in Atlanta and Norcal Waste Management Systems, Inc. in San Francisco have also standardized project management practices. Both companies train IS staffers in the techniques.

A third trend is the establishment of central project management offices that closely scrutinize requests for changes as a way to guard against overruns.

All three trends contrast sharply with the traditional seat-of-the-pants approach to IS project management, managers said. "In IS, most project managers are programmer/analysts or business analysts who have had no formal education in project management. But we plop on top of them the responsibility to manage projects," said Bill Durbin, information technology director at Norcal.

What many of those analysts lack, he said, are the communications and people skills needed for key tasks such as eliciting exact systems requirements from users.

"Soft skills are talked about the least, but they're probably the most important," he said.

LEADERSHIP QUALITIES

Jennifer Havens, a former project manager at Farmland Industries, Inc. in Kansas City, Mo., uses words such as "fortitude" and "courage" to describe the qualities a project manager needs.

To keep a 15-month, $7 million integrated supply-chain project on track, Havens began by setting the project deadline.

"May 1 was the drop-dead date, and everything else was backed into it," Havens said. "Users would come to us and say they wanted something, and we'd ask them what they wanted to give up to get it. Sticking to the date is how we managed scope creep."

Bruce Woodland used a similar technique last year to complete a $10 million electronic-commerce project on time and under budget at PanEnergy Corp. in Houston.

"Whenever someone wanted to add or change something, we'd tell them how long it would take and then ask them how they wanted to deal with it," he recalled.

"The first few times, the users almost took us out behind the Dumpster and hanged us. But when we could match specific functionalities they wanted with the time and dollars they required, we didn't have a prob-

Netscape beta will round out client/server package

▸ *Messaging Server to fill out SuiteSpot suite*

By Justin Hibbard

THIS WEEK, Netscape Communications Corp. will release beta versions of its client and server software that complete the package the company has aimed at the enterprise market.

The Mountain View, Calif., company will release a beta version of its Messaging Server 3.0 mail server and a second beta of its Communicator client for Windows NT, Windows 95, Windows 3.1, Macintosh and Unix.

COMPLETE SUITE

Messaging Server is the last of the nine servers in Netscape's SuiteSpot 3.0 to be released since the company announced the suite last October.

A final version of the entire suite is scheduled to ship by the end of this quarter and will cost $4,995.

Stand-alone versions of Messaging Server 3.0 will cost $995.

The product includes support for the Lightweight Directory Access Protocol (LDAP) and for extensions to the Simple Mail Transport Protocol (SMTP) that let receipts and error messages be returned to the sender.

The second Communicator beta adds several features that were previously announced but weren't implemented in the first release.

These include calendaring, support for Cascading Style Sheets and JavaScript Style Sheets and automatic administration features that let information systems professionals centrally configure and update Communicator clients throughout an organization.

Netscape Messaging Server 3.0 supports LDAP and SMTP delivery notifications

The new releases round out Netscape's bid for the corporate groupware and messaging markets.

Among the companies that have committed to Netscape's new products is US West, Inc.

"One of the reasons we picked the Netscape products, in addition to cost, was the Internet standards [used in the products], so that we can be flexible and adjust as the market changes," said Becky McDonald, manager of messaging and World Wide Web infrastructure at US West in Boulder, Colo.

Netscape has repeatedly pledged that its products will adhere to open standards so that customers can easily replace or integrate Netscape products with those of other vendors.

STANDARDS ISSUES

But Netscape also has repeatedly released products with features that are still under consideration by standards bodies or are extensions to existing standards.

"How do you differentiate in a world of standards?" asked Joyce Graff, an analyst at Gartner Group, Inc. in Stamford, Conn.

"The new euphemism for proprietary is extensions," Graff said.

She said it is unclear whether some of the features in Messaging Server 3.0, such as support for LDAP and support for X.509 digital certificates, are truly standards.

The features have been ratified by standards bodies but aren't yet widely supported by other products on the market.

But Netscape's Directory Server supports LDAP, and its Certificate Server issues X.509 digital certificates, which makes those products optimal for use with Netscape Messaging Server 3.0.

MTI's Gladiator enters high-end ring

▸ *Open system offers flexible RAID support, simultaneous server access*

By Tim Ouellette

THIS WEEK, MTI Technology Corp. will announce a high-end open storage system targeted at data centers that run heavy data loads on Unix and Windows NT systems.

Called Gladiator 3100, the system offers flexible RAID support and host access and is expected to help users maintain high system performance levels.

For example, Cable Systems International (CSI), a copper wire manufacturer in Phoenix, chose Gladiator to maintain uptime and performance as its storage requirements increased, according to Rob Bartlett, a network administrator.

CAPABILITIES

CSI installed six Gladiator systems to maintain the 98.5% uptime required by an around-the-clock manufacturing and computing operation.

Gladiator 3100 features include the following:

- Multiple, simultaneous RAID Levels 0, 1 and 5.
- The ability to have four different host servers access each array module simultaneously.
- The ability to add RAID controllers when capacity increases to keep performance at high speeds. The RAID controllers include write-gathering cache, which reduces the number of storage I/Os that would normally bog down a system.

Analysts said the offering from Anaheim, Calif.-based MTI will provide some competition — especially on price — for EMC Corp. in Hopkinton, Mass., the leader in the open systems storage market.

For example, a 291G-byte Gladiator system costs $298,000. That is less than a comparable EMC system, but the Gladiator lacks some services and software that EMC provides.

Thomas B. Lahive, an analyst at International Data Corp., said EMC and MTI are the growth leaders in this market, which hit $1.7 billion in sales last year. As a smaller firm, MTI must move more of its business to open systems and keep costs down to stay competitive, he added.

Health care groups struggle with the Web

▶ *Internet could cut costs, but privacy issues concern doctors*

By Thomas Hoffman
SAN DIEGO

INFORMATION SYSTEMS managers in health care are having a tough time treating "the killer app."

The World Wide Web offers companies a way to cut costs, but security and other obstacles make it hard for IS managers to take full advantage.

Many are reluctant to make sensitive patient data available over the Internet — or even over a more closed corporate intranet — for fear of breaching patient confidentiality.

L. Allen Dobson (left) uses a thin-client, pen-based tablet to access patient records

For example, a physical therapy unit of Mercy Health Services, an alliance of more than 20 hospitals in Michigan and Iowa, had planned to post unencrypted patient data on the Internet. But one of the company's IS managers caught wind of the plan and warned senior management about the liability risks.

"I'm scared to death" about existing Internet security, said Mary F. Christner, a senior planning consultant at the company's Mercy Information Systems unit in Farmington, Mich. She was one of nearly 15,000 attendees at last week's Healthcare Information and Management Systems Society's annual conference held here.

CONSOLIDATION CRUNCH

Health care mergers have reached a fever pitch, and browser-based technology offers these new partners a chance to link legacy applications quickly via browser-based technologies such as Lotus Development Corp.'s Domino, said Peter H. Gretz, vice president of American Management Systems' health care group in Fairfax, Va.

The problem is that the health care industry's use of information technology is 10 to 15 years behind the banking and manufacturing sectors. As such, most health care groups lack the wide-area networks and Internet architectures necessary to support this kind of integration, said Douglas M. Williams Jr., a partner at Arthur Andersen & Co. in Dallas.

Cabarrus Family Medicine in Concord, N.C., a practice that has 26,000 patients across four clinics, recognized the need to play catch-up. Until recently, Cabarrus doctors spent up to 40% of their time sifting through paper-based patient records to meet health maintenance organization requirements, said L. Allen Dobson, director of Cabarrus.

To free up more time for patients, Cabarrus in November began to install a $250,000 intranet-enabled computerized patient record system using software from HealthPoint G. P. in Durham, N.C.

When the system is completely rolled out in July, 20 physicians and 24 residents will be able to access patient records across the intranet using standard browser technologies.

The system is also cost-effective.

Cabarrus' choice of thin-client, pen-based tablets from Epson America, Inc. was 35% to 40% cheaper than installing full-blown PCs or workstations to manage patient data, Dobson said.

It was supposed to be the launch of a development *project*...

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Software funnels voice, fax, E-mail to one mailbox

▶ *'Unified messaging' promises convenience, cost savings*

By Barb Cole

OCTEL COMMUNICATIONS CORP. last week announced software that delivers voice mail, faxes and E-mail to one mailbox. Users can retrieve their various messages by using a PC or telephone.

"Unified messaging" promises more convenience for end users and lower costs for corporate network managers, but it could clog servers with a flood of voice mail.

Milpitas, Calif.-based Octel's Unified Messenger works with Microsoft Corp.'s Exchange messaging server and PC voice cards to answer calls, record and compress messages and hand them off to an Exchange mailbox or a worker's phone.

"I would really like to get all my messages in one place," said Ethan Winkley, Exchange administrator at Phelps Dodge Tyrone, Inc., a Phoenix-based copper mining company that is moving 7,000 users to Exchange. "I prefer E-mail and don't really want to bother with retrieving voice mail by phone," he said.

Unified messaging is also expected to lower administration costs by allowing companies to maintain one directory for electronic mail and phone extensions within Exchange.

Octel's offering sends voice-mail messages over the corporate wide-area network, thus eliminating long-distance phone charges.

"I'm sure there'll be cost savings because we'll only have one directory to manage, and we're leveraging existing [Exchange] servers," said Bob Jaglowski, senior MIS manager at Harris Semiconductor, a division of Harris Corp. in Melbourne, Fla. The company is piloting the Unified Messenger software as part of its Exchange deployment.

Jaglowski said the main business reason for adopting the technology is that it will let Harris workers worldwide check their E-mail after hours by dialing in from their home phones.

UNIFIED MESSENGER

Benefits:

- One-point access for E-mail and Exchange
- Stores messages in Exchange server
- Shares a directory of users with Exchange

Drawbacks:

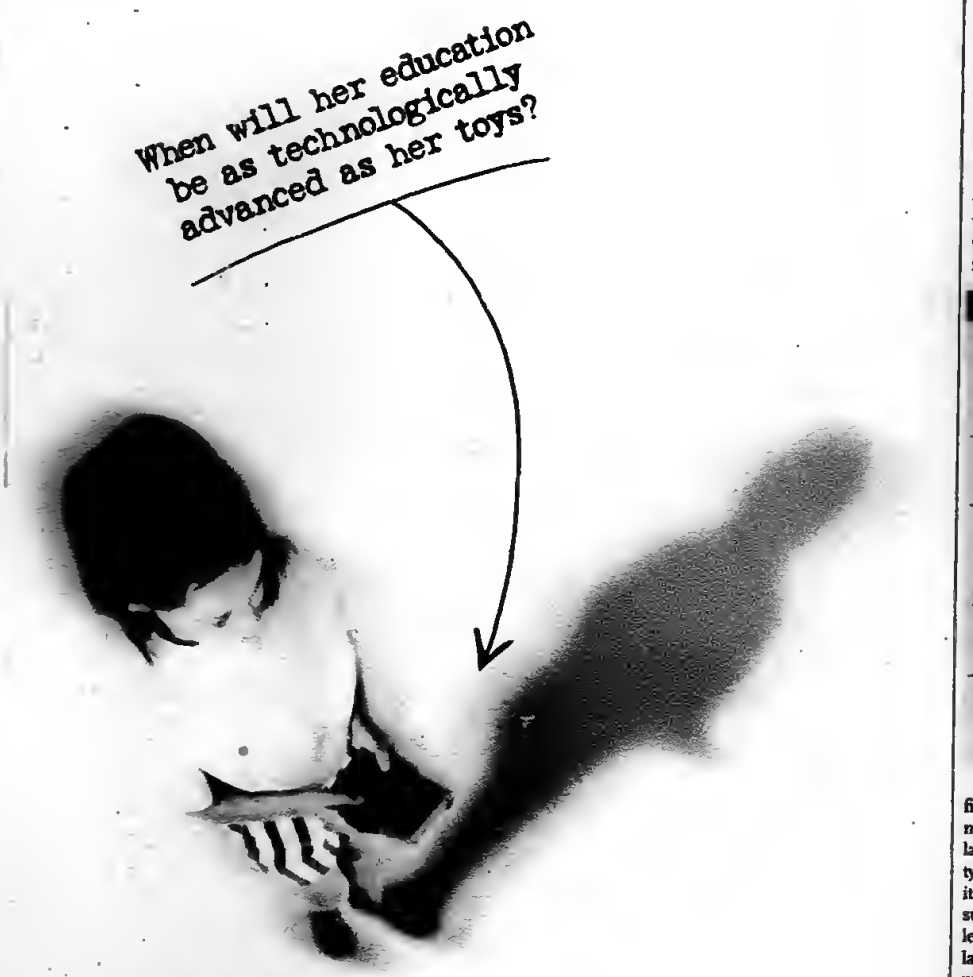
- Limited to Windows NT and Exchange
- Gateway required to work with other voice-mail systems

Octel's principal competitor in the unified messaging market is Lucent Technologies, Inc. in Murray Hill, N.J. Lucent last week announced it is shipping Intuity Message Manager 4.1, an upgrade of its unified messaging software that adds support for several new languages and lets mobile users access messages from a laptop computer. The Intuity offering, which has been shipping for more than a year, works with Lotus Development Corp. Domino messaging servers.

Octel's offering is unique, however, because it stores voice mail within the Exchange message store, said Paul Stockford, an analyst at In-Stat, a market research firm in Scottsdale, Ariz.

Octel's approach appeals to users administratively but has drawbacks. Exchange servers hold a maximum of 16G bytes of messages per server, and that could fill up fast with the addition of voice mail. Voice messages consume about 4K bytes for each second of audio.

Unified Messenger for Exchange will ship in May. It costs about $200 per user.



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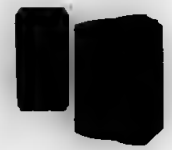

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Antivirus software gets shot in the arm

▶ *Symantec protection tool blocks access to documents that contain nonapproved macros*

By Sharon Machlis

HACKERS ARE CREATING so many macro viruses these days, it's getting tough for screening software to keep up.

So after years of touting "signature screening" as protection against malicious code, Symantec Corp. is raising the ante. The Cupertino, Calif., company by May 1 will ship software that lets information systems managers block access to files that contain any macro viruses that aren't on a company's approved macro list.

The Macro Virus Protection system will prevent users from opening a document or spreadsheet that contains nonapproved macros.

This means users could be barred from opening documents that are electronically mailed from their customers, even if they include benign viruses.

"We are taking a conservative route," said Alex Hoddox, product manager at the Symantec Antivirus Research Center in Cupertino. "Macro viruses are out of control at this point."

INTERNAL GREMLINS

Macro viruses are embedded in documents, spreadsheets and other files. Once accessed, they can create mischief such as changing document templates or replicating and using up systems resources.

The Macro Virus Protection system was inspired partly by Merck & Co., Inc. in Whitehouse Station, N.J.

The company's Chief Information Officer Charles Popper sought to let in only approved macros instead of simply screening out known viruses.

Such a system offers substantially more protection because it allows IS professionals to check each macro virus before they allow it on the system, Popper said. "It's something we find exciting," he said.

But the move strikes some users as overkill.

"I don't think we would go that far," said Donald L. Phipps, a senior systems analyst at a California manufacturing company. Phipps presented a paper at the International Virus Prevention Conference last month in Arlington, Va.

GERMINATION PERIOD

Haddox said the Symantec Antivirus Research Center can develop a virus cure within 24 hours.

But the problem, he said, is to get samples before users are infected.

The first macro virus, Concept, was discovered in August 1995. A year later, there were 42 known macro viruses. This month, researchers had documented 259, Haddox said.

Symantec may develop software that allows access to files in nonapproved macros by disabling the macros, Haddox said.

The initial Macro Virus Protection system will support Norton AntiVirus 2.0 for Windows 95 and Windows NT.

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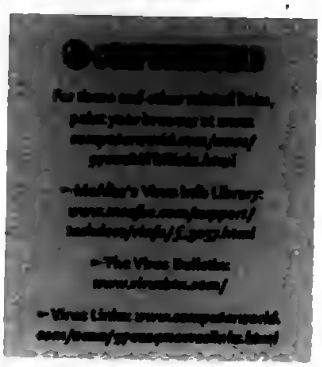

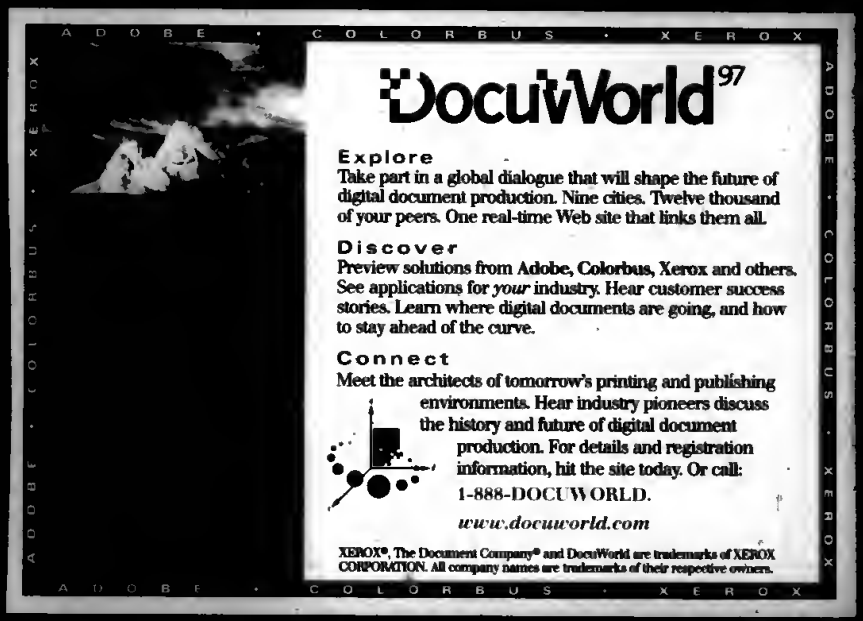
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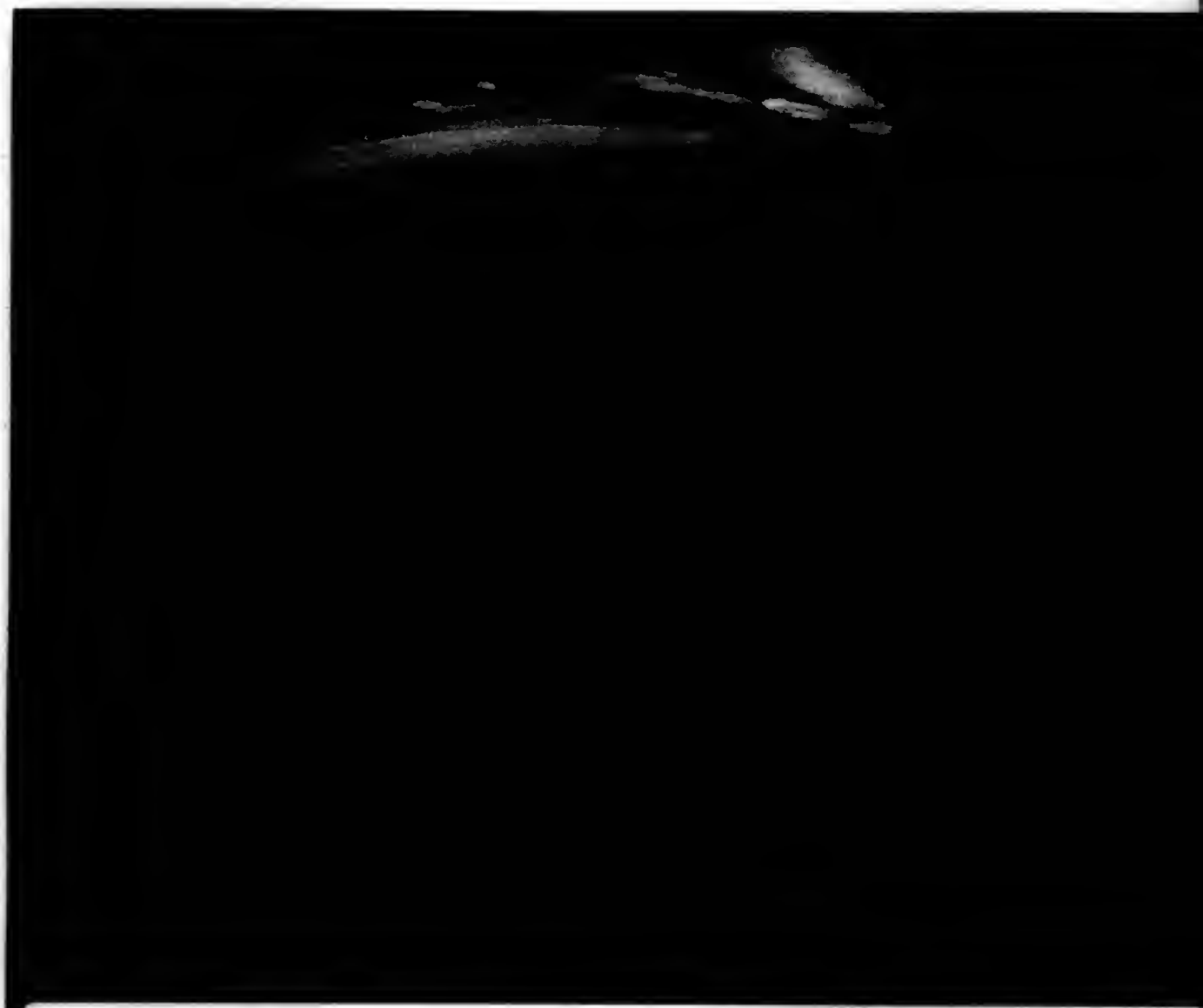

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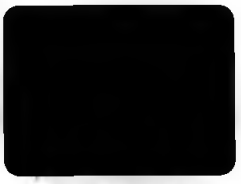

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YEAR 2000

Congress examines date-change progress

By Robert L. Scheier
WASHINGTON

A CONGRESSIONAL committee today will review the federal government's progress in tackling its year 2000 problems, with many observers skeptical that federal agencies are doing enough to prevent disruption of vital government services.

The Government Management, Information and Technology Subcommittee of the Government Reform Oversight Committee is scheduled to meet today to discuss the latest estimates submitted by federal agencies detailing how much time and money it will take to solve their year 2000 problems.

Earlier this month, federal information systems officials who spoke at the Year 2000 Conference & Expo here indicated that they hope to fix just enough critical systems to get by, with less-critical systems being left for later repair or even being scrapped.

"I don't think we're going to get it all done," said Judith Draper, project director of year 2000 work at the Social Security Administration. Speaking at the conference, she acknowledged that across the federal government, "testing is going to suffer. We'll have to end up testing until the last minute and then [push the fixed code] into production."

Much of the software used by federal agencies, like that employed elsewhere, uses two-digit year fields. If those systems can't tell the difference between the 20th and 21st centuries, everything from Social Security checks to shipments of supplies to troops in wartime could be snarled.

When some federal agencies expect to be year 2000-compliant

Agency	Date
Small Business Administration	December 1998
Department of Education	March 1999
Agency for International Development	July 1999
Department of State	August 1999
Air Force	December 1999
Department of Justice	
Department of Veterans Affairs	
NASA	

Source: Office of Management and Budget, Washington

But most federal agencies don't plan to have their systems fixed and back in production until late 1999, according to a report released earlier this month by the Office of Management and Budget (OMB). That's "cutting it too close" to tackle last-minute problems, said Rep. Tom Davis (R-Va.), who sits on two subcommittees that oversee year 2000 issues.

Money will also be tight because IS managers acknowledge that the $2.3 billion estimate for year 2000 work they gave to the OMB, and which President Clinton included in his budget proposal to Congress, will rise. Davis predicted the cost will at least double, adding that Congress is in no mood to allocate more money as it struggles to balance the budget.

TOO LOW

The Information Technology Association of America (ITAA) lauded the OMB for acknowledging the seriousness of the issue but called the cost estimates "incredibly low." According to ITAA President Harris Miller, "Outside experts have estimated the government conversion costs at closer to $30 billion."

Faced with those challenges, federal IS chiefs are first trying to determine which systems must be fixed and which can be scrapped. "We're seeing this as an opportunity to get rid of systems we don't need," said Maj. Ronald Spear, the U.S. Army's year 2000 project officer. Among the most critical, he said, are logistics and command-and-control systems.

At the Internal Revenue Service, corporate tax systems top the list, said Julia McCreary, technical adviser to the year 2000 project. But she noted that such systems make up 55% of IRS software and more work is needed to zero in on specific crucial systems [CW, Feb. 10].

When speaking about the Social Security Administration, Draper was upbeat. She said the agency is "in very good shape" because it got started on its year 2000 problems earlier than many government agencies. She said she is confident the agency can meet its November 1999 deadline for having its systems repaired, tested and back online.

Washington to move services to cyberspace

▶ *Officials say IS investments will improve quality, save money*

By Sharon Machlis
McLEAN, VA.

SECURITY DETAILS still have to be worked out, but federal information systems executives have expressed support for plans to push the delivery of many government services — from food stamps to regulatory forms — into cyberspace by 2000.

Vice President Al Gore unveiled those plans — called the Access America report and program — as part of his "reinventing government" initiative.

"It's a very good report. I am very optimistic," said Mary Ellen Condon, director of information management and security at the U.S. Department of Justice. The plan does have some tight deadlines, but Condon said, "If we're not challenged, things don't happen."

There are no new budget appropriations for Access America, but proponents argued it will ultimately save more money than it costs.

[Vice President Gore's Access America] "is a very good report. I am very optimistic. If we're not challenged, things don't happen."
– Mary Ellen Condon, Justice Department

Some federal agencies have poor records of getting value from IS investments. But it is possible to cut expenses with online delivery of government services — especially with the rise of Web browser technology, said Peter Freeman, dean of the College of Computing at the Georgia Institute of Technology in Atlanta. "I wouldn't reject such plans out of hand," he said.

The program, announced at the recent Virtual Government '97 conference here, includes the following elements:

- Testing online delivery of "commonly requested services," such as applying for loans or requesting passports.
- Testing a government services card to handle electronic funds transfers for tax refunds, food stamps, Medicaid, vehicle registrations and postal sales.
- Building a World Wide Web site for businesses to check environmental, safety and health regulations and fill out forms online.
- Testing a Global Criminal Justice Information Network that would give police a suspect's criminal record at his arrest.

Privacy advocates said they worry about the interagency data sharing envisioned by the Clinton administration, despite the report's assurances that privacy will be safeguarded.

"It's a good thing for people to have easier access to government records and information. However, when you start creating these new databases, you're asking for trouble," said David Banisar, staff counsel at the Electronic Privacy Information Center in Washington.

ACCESS AMERICA SCHEDULE

April 1997
- Begin to develop Internet book-mobile-type vehicle
- Infrastructure for public access to environmental data

September 1997
- Pilot test of government services card
- Treasury Department will establish a public/private group to develop electronic payment methods

December 1997
- Online site to go live for access to environmental, safety and health regulations
- Field testing of Global Criminal Justice Information Network

January 1998
- Pilot projects will go live to deliver most-requested services online

January 2000
- Core set of popular government services will be available online

Still looking for a few good CIOs

Six months after a new law required 23 federal agencies to appoint chief information officers, all but three of the positions have been filled.

But some agencies have only interim CIOs, according to Bruce McConnell, chief of information policy and technology at the federal Office of Management and Budget (OMB).

The roster is in continuous flux, but for now, the Education, Transportation and Defense Departments are still searching for CIOs, McConnell said.

A major stumbling block to finding qualified candidates is money. While the $115,600 salary in the government pay structure can be boosted somewhat by recruitment and retention bonuses, "it's still in the $130,000 to $140,000 range," McConnell said. "The private sector pays three times as much."

Nevertheless, McConnell estimated that one-third to one-half of the agencies' CIOs came from outside government. Some were looking for a new challenge or wanted to spend a few years in public service, he said. A few retired early from private-sector jobs.

In other cases, talented midlevel IS executives in the private sector were willing to take pay cuts to vastly increase their responsibilities. After a few years, their resumes will look much more impressive as they move back to industry, said John Koskinen, deputy director of management at the OMB. — Sharon Machlis

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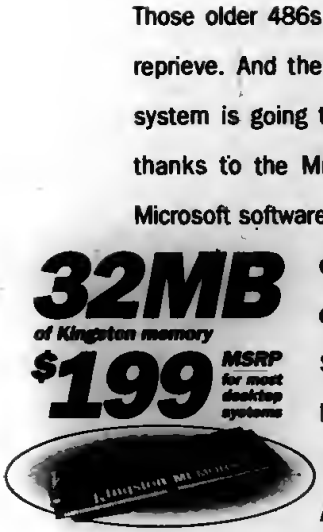

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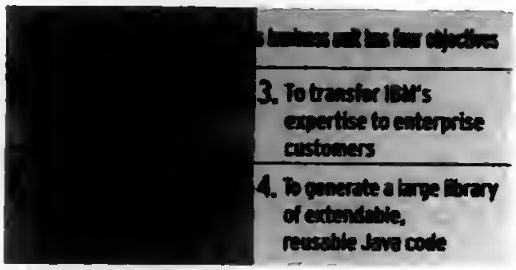

IBM division builds Java applets for OS/2

By Laura DiDio

IBM'S NEWLY FORMED Network Computing Projects business unit has just completed its first project: designing a Java-based mortgage loan applet for CERA Bank in Belgium.

The 4-month-old business unit has two main goals: to propel IBM to the forefront of Java development and actively assist its Fortune 500 OS/2 Warp accounts in codeveloping applications for the Internet.

The business unit is based in Austin, Texas, and consists of about two dozen top IBM engineers culled from various divisions in the company. So far, it has attracted 20 customers — 16 of which are international concerns.

CERA, one of the top five banks in Belgium, with 6,000 employees at 950 branches, anticipates that the new Java-based mortgage loan calculator will be the foundation for its electronic commerce efforts, according to Rudi Peeters, CERA's electronic banking officer.

CERA's mortgage loan calculator will allow customers to estimate mortgage loan payments over the Internet.

"We don't want to be a software farmer shipping diskettes to customers. We want to distribute information fast, cheap and easily to our customers, and the mortgage loan Java applet does just that. Next, we'll do a money-transfer Java applet," Peeters said.

The mortgage loan calculator will allow CERA's commercial customers to estimate their mortgage loan payments over the Internet from anywhere in the world, Peeters said.

"Our customers will simply download the applet from CERA's home page and enter different loan variables such as the loan amount, time to borrow, type of payment and current interest rates," Peeters said.

CERA — an all-OS/2 Warp shop — will be able to maintain and update applications on its local OS/2 Warp World Wide Web server, Peeters added.

QUICK RESULTS

Meanwhile, the mortgage loan Java applet puts transactions online and in real time, so the bank's clients can immediately see the results.

Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass., said, "Users are abandoning OS/2 Warp because they can't get access to applications. Developing in Java removes that obstacle because it's platform-independent."

IBM does retain all intellectual property rights to the Java code it develops in order to reuse the code as the foundation for future applets.

"Java is not throw-away code," Oltsik said. "So users get foolproof investment protection. Regardless of whether or not they stay with OS/2, they don't have to toss the baby out with the bathwater."

ENTERPRISE INTEGRATION

Middleware merger

▸ *BEA Systems to buy Digital object and messaging products*

By Tim Ouellette

BEA SYSTEMS, INC. is buying a seat at the middleware table with the big boys, including IBM and Oracle Corp.

The Sunnyvale, Calif., company last week agreed to purchase Digital Equipment Corp.'s well-respected but struggling object and messaging middleware products, ObjectBroker and DECmessageQ, as part of a partnership deal (see chart).

Last year, the company purchased Tuxedo, Novell, Inc.'s leading high-end transaction-monitoring product. The purchase gives BEA a full suite of middleware products that lets users tie together enterprise applications.

FEW CHOICES

That type of integrated suite is otherwise available only from larger companies such as IBM or Oracle, observers said.

The Tuxedo transaction monitor acts as a traffic cop that directs commands and data requests to the right places in a network. It has features such as load balancing, two-phase commit and the ability to roll back failed transactions.

DECmessageQ sends secure data messages between applications, using queues to store messages until the data is retrieved. ObjectBroker lets developers reuse objects in those application networks.

DRESSING UP MIDDLEWARE

Here's how BEA and Digital will combine Tuxedo with DECmessageQ and ObjectBroker

- BEA will integrate three products
- Digital will invest in BEA
- Digital will integrate the suite with Microsoft's native Windows middleware
- BEA will port Tuxedo to Digital's OpenVMS
- Digital employees will be offered jobs at BEA

"The development world is moving to transactional objects," which result from interaction among object request brokers (ORB) such as ObjectBroker and transaction monitors such as Tuxedo, said Evan Baur, vice president of data management research at Giga Information Group in Westbrook, Conn.

As a result of the deal, "Tuxedo application development will get easier [via objects]," Baur added.

A similar standards integration effort by a middleware industry group is already in progress, aimed at uniting message-oriented middleware such as DECmessageQ with ORB technology [CW, Feb. 17].

Existing Digital customers will benefit from the new product development efforts that previously had been stymied by poor marketing and integration at Digital.

"Every time [Digital CEO Robert] Palmer sold off software offerings, he lowered the value of the rest of Digital's software products," Baur said. "[Digital has] to divest all the software now because what is left has less value."

• Acquisition spree continues

Ascend Communications uproots Whitetree

By Stewart Deck

LAST WEEK, Ascend Communications, Inc. spent approximately $70 million to purchase Whitetree, Inc., a developer of high-speed LAN switching products based on Ethernet and Asynchronous Transfer Mode.

Ascend will exchange approximately 1.1 million shares of its stock for all of Whitetree's privately held outstanding shares.

"In general, the message for [networking] vendors today is 'broaden your portfolio,'" said John Morency, an analyst at The Registry, a consultancy in Newton, Mass.

"Look at what happened to Shiva [Corp.]," Morency said. "They were a big player in the remote access area, but remote access has become commoditized and intensely competitive. Their earnings are down, and their stock has been battered."

SPENDING SPREE

Whitetree is the latest purchase designed to support the Alameda, Calif.-based vendor's effort to broaden its product line.

Last month, Ascend spent $29 million for StonyBrook Services, Inc. and its line of network management software.

Last June, it spent $300 million to acquire NetStar, Inc. and its Internet Protocol routing and switching schemes.

As a result, Ascend has extended its scope in terms of remote access product support, scaling from very small to very large, Morency said.

Also, Ascend can now show that it has industrial-strength routing capability that can scale up to very high speeds, Morency said.

Whitetree's engineering talents will allow Ascend to "develop higher-speed architectures and interconnection options for the [Internet service provider/carrier markets]," said Craig Johnson, a principal analyst at Current Analysis, a Portland, Ore.-based consultancy.

Analysts said Ascend needs to expand its offerings to continue to attract its core Internet service provider customers and to compete with the Big Four networking vendors: Cisco Systems, Inc., Bay Networks, Inc., Cabletron Systems, Inc. and 3Com Corp.

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70. Mining/Construction/Petroleum/ Refining/Agriculture
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23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
80. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
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12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
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70. Medical, Legal, Accounting Mgr.

OTHER PROFESSIONAL MANAGEMENT
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90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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70. Mining/Construction/Petroleum/ Refining/Agriculture
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80. Information Centers/Libraries, Educators, Journalists, Students
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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

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The Best on the 'Net

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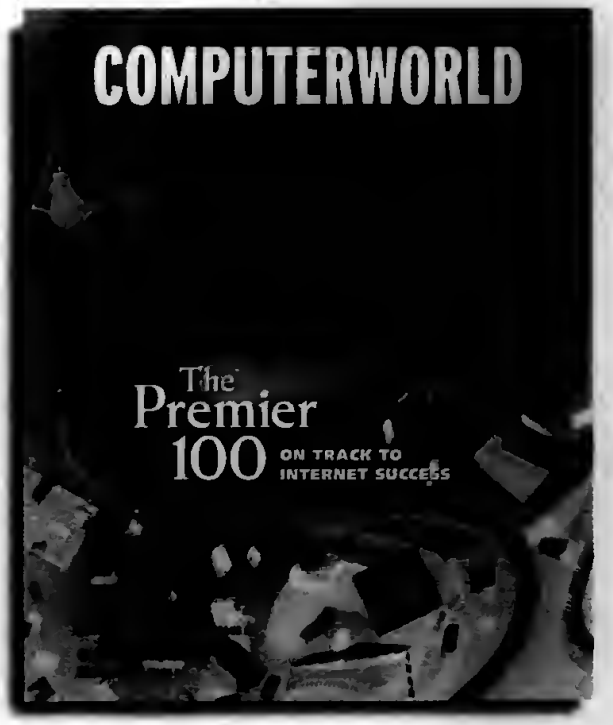

Key topics include:

Risk vs. opportunity: Sales transactions on the Web
Who's leading the way in performing transactions on their sites? Is it a good idea for everyone?

Start small, move up: The intranet evolution
How Web-enabling a non-critical application gives way to widespread use and innovation with Web technologies.

TechSpeak
What are the IT building blocks of Premier 100 organizations' intranets and sites?

Web wunderkind: Retaining Web-savvy pros
Four Premier 100 organizations offer tips on recruiting (and keeping) these rising stars in the IT workforce.

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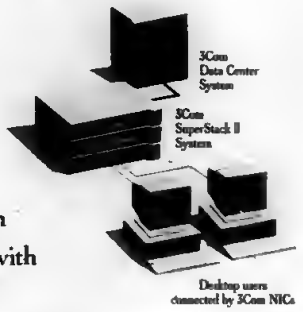

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OPINION

User group woes Cambridge Technology Partners, Inc. released a study earlier this month [CW, Feb. 3] that revealed some less than startling data. It turns out information systems professionals would rather seek guidance from their peers than from analysts or the media.

It brought to mind a series of stories we've run since mid-1996 about various user group woes. If IS prefers the company of its peers, why are so many user groups struggling — either financially, administratively or with the vision thing?

One reason is that user groups, by nature, tend to be formed and run by volunteers. Failing to run a user group like a business — both in terms of meeting financial responsibilities and servicing customer needs — can prove fatal. For example, burdened by $100,000 in debt, the New York Macintosh User Group almost went under last month. And user groups attached to a single vendor can find the going even tougher. An intensely competitive market has vendors very interested in controlling the message that goes out to gatherings of their customers, says Julie Silverstein at Smith, Bucklin & Associates in Chicago. Her division manages more than 30 technical user groups, forums and industry groups.

Another key is the advent of the Internet. A whole online community of similarly buffaloed souls is just a few mouse clicks away for anyone attached to the 'net and not inclined to leave the office.

As for the vision thing, Priscilla Tate, executive director of the Technology Managers Forum (www.techforum.com) says many user groups disband because they have trouble adding value beyond the "help-me-fix-it-now" stage.

So who needs user groups? You do. Good user groups still provide crucial services such as advocacy, networking and a local or regional focus. And much of that work is still best done face-to-face. Remember, there's safety — and a whole lot more — in numbers.

Patricia Keefe, *News editor*
Internet: *patricia_keefe@cw.com*

LETTERS

How did software industry get $13B piracy figure?

REGARDING THE ARTICLE "Software pirates' booty topped $13B, study finds" [CW, Jan. 6]: I'm no advocate of stealing software, but printing big numbers that are represented as hard fact can bring on hysteria.

I'd like to ask the people who came up with that figure, International Planning & Research (whoever they are), some questions: How was that $13 billion calculated? Suggested retail prices? Probable street prices? Wholesale prices to distributors/retailers? Does anybody honestly believe that all that software was bought by people who would really have paid cash for it if they were unable to "pirate" it?

And does anyone really believe "officials at the software companies" who said it would bring down prices and/or increase their research and development efforts if a lot of that money made its way to their corporate accounts?

Brian Battles
Newington, Conn.
bbattles@ct1.nai.net

Editor's reply: *The $13 billion estimate is based on the average retail price of the software in the country where the piracy occurs. Certainly not all the pirated software would have been purchased and paid for, but that's how the industry estimates its losses: by figuring out worst-case scenarios. Software executives say the companies that enjoy additional revenue from a reduction in piracy could use that revenue in a variety of ways, such as passing along lower prices to customers, increasing research spending or paying shareholders a dividend.*

Visa should take its own steps to address year 2000

YOUR ARTICLE "Visa leads charge for compliance" [CW, Jan. 13] should have been entitled "Visa passes the buck." Visa wants to keep using a two-digit expiration year, and expects its customers to kludge code to cope. The correct solution is a four-digit expiration year on the card. Once Visa takes that step, then it might consider pushing its customers around.

Larry Millett
St. Louis

PC vendors: Don't be stupid and cut back on warranties

AS AN AVID PURCHASER of Dell computers, let me say it as politely as I can: Screw with your warranties and we will find another provider for all our PCs and servers ["PC warranty changes may up user costs," CW, Jan. 13].

For five years I have been a very big supporter of Dell, not only for its quality, but because of how well it stands behind its product.

If the gentlemen in Austin haven't learned that their customers do in fact notice when they try to trim a little here, a little there, they in fact do.

Dell has done well because of its ability to meet the varying needs of its user basis, but something as stupid as cutting back on a warranty for the sake of helping the bottom line will not come without a price tag. Happy customers are what pays the bills, not new buildings on streets named after the [company's] founder.

John Paquette
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Cincinnati
jpaquette@ssac.sitix.com

A different view of how PDAs can be useful

I FOUND ONLINE EDITOR Johanna Ambrosio's editorial very interesting ["Handheld hype," CW, Jan. 13].

However, I'd like to offer a different view of personal digital assistants and suggest that PDAs really can be usefully applied. When the PDA is used as an "assistant" to your desktop — and not a replacement for it — it can be a powerful tool.

PDAs should assist PCs, not replace them

When you view it as a desktop replacement, as Ambrosio did, I can see how any PDA would fall short. They do have small keys, small screens and are generally inappropriate for Web surfing and word processing.

The important factor is the ability to synchronize the information on the PDA with the desktop. The long battery life and the ability to carry the device in my pocket are also advantages over the laptop.

David Lomartire
Portland, Ore.
dml@sequent.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Stamp out digital homelessness

Gordon Eubanks

In the fast-paced computer industry, every year is a milestone. But this year presents a special opportunity to harness the social and economic power of information technology for the benefit of all.

It's time to exploit the powers of IT for people, not just for profits.

This year begins the third decade of the PC. It also follows the 25th year of the microprocessor and the 50th year of the electronic computer, two of the greatest inventions of this century.

As we head toward 2000, computing products are becoming faster, cheaper and better. We're all familiar with the market comparison with the automobile: If cars had advanced at the same rate as computers, you could buy a Rolls Royce for about $2.50 and get a million miles to the gallon.

Both the automobile and PC industries were started by hobbyists, pursued by fanatics and then embraced by the broad population. But before long, IT will surpass the auto industry share as a percentage of the U.S. gross domestic product.

Technology has been a great economic engine, but we haven't done a good job ensuring that the benefits of IT extend to all people.

It will be tragic if we allow two societies to arise — the information haves and the information have-nots, the digitally housed and the digitally homeless. Social justice and economic self-interest demand that we make IT accessible to all and an agent for human betterment.

Our top priority must be to exploit computer technology for personal education. Education, like the sun, energizes further human accomplishment. Only by seeding a generation of educated men and women throughout the world can we expect to grow the global economy.

In 1975, there were only 300,000 computers on the planet. Today, we produce twice as many computers every week, or two every second. And we have entered the first decade of the Internet. One trillion bytes of information, which is equal to 60 million typed pages, are posted on the Internet each month. In short, our industry is on the verge of creating the world's first fully networked society.

OUT OF TOUCH

Yet the stark fact remains that 50% of the world has never made or received a telephone call. Only 10% of the U.S. population is on the Internet. Surveys suggest that 60% of our citizens never read a book, let alone use computers for enrichment. The world of computers and networks can be a gymnasium for the imagination, but how vigorously we exercise within it will determine how quickly we build strong human capital.

One small step in the right direction is the donation of software and/or hardware to the digitally homeless. Many companies, including ours, give older but perfectly usable products to schools and nonprofit organizations that serve disadvantaged communities. Through focused programs like this, we can boost social responsibility and consumer loyalty at the same time.

Let's remember our human as well as economic compact to use our technology for growth, not just balanced budgets. For enlightenment, not just enrichment. For people, not just profits.

We shouldn't expect miracles, but we should focus our energies on steady improvements in the quality of life around the globe. Instead of turning the information age into a tale of two societies, let's make it a drama of inclusion and human fulfillment.

Eubanks is president and CEO of Symantec Corp. in Cupertino, Calif. At a charity auction last year, he won the title of honorary publisher of Computerworld *for a week.*

Mr. Bozo, meet Miss Courtesy Worm

Michael Schrage

From: Outraged <54321.1234@online.com>

To: Michael Schrage

Subject: Your Tiny Brain

Just how stupid are you? No, don't respond. I know how stupid you are because I read your column. I can't believe you actually get paid to write this junk. From now on, please try to write about something you know — that way, your column won't have to appear so often.

Have you gotten flamed lately? Did you respond in kind or in cruel? Most people wouldn't dream of calling up someone they'd never met and leaving an answering-machine message along the lines of, "Hey, putz! You're a moron." By contrast, scores of people don't hesitate to type up and — without the slightest trace of self-consciousness or self-awareness — send an E-mail message that says the same thing.

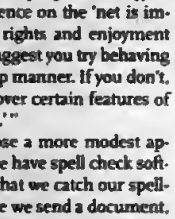
Like people who turn into maniacs when they get behind the wheel of a car, some folks just can't wait to fire up their PCs and start flame-throwing. Forget 'netiquette for these creatures.

The fashionable IS approach to this surge of E-mail meanness is to filter it out. Many intranets now offer "bozo filters" to screen out mail from folks they're sick and tired of. In his terrific cyberpunk novel *Earth*, author David Brin postulates an "uber-filter" that he calls a "courtesy worm."

THE COURTESY POLICE

"It is a guerrilla program — an illegal virus — that goes around targeting people who are too angry and vituperative on the 'net," Brin writes. "Attracted by unsavory, scatological and ad hominem phrasing, the worm gets into the flamer's system and announces, 'Hello. You have been infected by the program *Emilypost* because your presence on the 'net is impinging upon the rights and enjoyment of others.... We suggest you try behaving in a more grown-up manner. If you don't, you will soon discover certain features of *Emilypost* which ...'"

I'd like to propose a more modest approach. Much as we have spell check software that assures that we catch our spelling mistakes before we send a document, we should have "Flame check" software designed to catch our rudeness — intentional and unintentional.



Flame checker software would screen outgoing E-mail for rudeness — intentional and unintentional.

For example, messages that have the word "stupid" or "idiotic" or "peabrained" in them would trigger Flame check to ask, "Are you sure you really want to send this?" If the response was positive, Flame check would flash the question, "Are you sure?" before the message is sent.

Similarly, Flame check might make it difficult for you to immediately respond to a message with a hostile phrase in it — to assure that you don't unthinkingly counterflame.

KEEP IT IN CHECK

There are all kinds of ways to check an instinctive tendency to flame. What's wrong with a bit of software to make people a little more aware of the messages they are sending? It's just as important to build filters for the outgoing messages as for the incoming ones.

This suggestion is placed in the public domain in the hope that it might inspire an online service or an intranet manager or two to embrace it as a design option. Consider the suggestion my small effort to improve the quality of network life and discourse.

Whether you like this modest idea or not, could you do me a small favor? Whatever you do — please, don't write.

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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COMMENTARY

Paying the Wintel tax

DAVID MOSCHELLA

INDUSTRY RESEARCH indicates that about 70 million PCs were sold worldwide last year. During the same period, Intel and Microsoft made combined profits of about $7.7 billion — $5.2 billion for the chip master and $2.5 billion for the software giant. Dividing $7 billion by 70 million units reveals that the Wintel duo makes about $100 of profit per PC. Let's call that the Wintel tax. It's a useful, if somewhat oversimplified, metric.

Assuming a four-year life cycle for PCs in corporate America, the Wintel tax comes to roughly $25 per machine per year. For that small amount, customers get truly interoperable hardware, high rates of investment and innovation and clear standards leadership. It's no wonder that people who use computers remain far less concerned about Wintel's dominance than those who sell them.

From a global perspective, the numbers are considerably more intimidating. The stock-market capitalization for each company (price per share multiplied by the total number of shares outstanding) has passed the $100 billion mark. When combined, the total Wintel valuation matches the combined central bank reserves of the U.S., Japan, Germany, France and the U.K. According to *Fortune*, Intel was the fifth most profitable U.S. corporation last year. It will likely assume the No. 1 ranking this year or next.

BLEAK OUTLOOK

The Wintel megafortune will continue to grow because prospects for non-Wintel platforms have never looked so dim. Apple sales are falling rapidly; IBM has cut back its OS/2 promotion and shifted its PowerPC chip away from the Windows NT market. Only a seriously weakened Digital remains committed to building a platform alternative to Windows NT. Unix momentum has slowed considerably, especially in the once-vibrant workstation segment. Wintel's desktop and low-end server dominance has now been generally conceded.

One of the ironies of this duopoly is that, although Intel is the bigger and more profitable player, most of the industry's concern centers on Microsoft. Intel has shown admirable restraint in not using its position in microprocessors to dominate related sectors. The only companies it really wants to clobber are plug-compatible rivals such as Advanced Micro Devices and Cyrix.

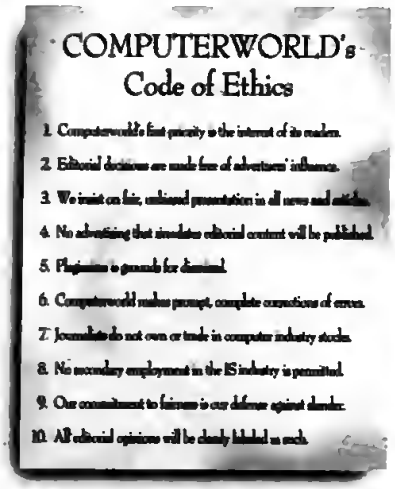
In contrast, Microsoft seems determined to try to use its market and financial power to dominate just about every software market of significance. Consequently, Microsoft's list of enemies includes most of the major software players, and Intel's Andy Grove has emerged as one of the industry's elder statesmen.

For better or worse, customers have granted these two companies the privilege of steering the world's most important industry. They set standards, dominate research and development, dole out huge amounts of venture capital and even shape our view of where the industry is headed.

Although there are reasonable scenarios in which the power of both companies could be restrained, none of the scenarios can happen quickly.

For at least the next two years, it's a Wintel world. We can only hope that our future taxes remain the bargain they've been so far.

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.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Guest Ticket Registration

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Registration Option (Select One)	Description	Instructions for Selection (Select Options from Box A/B below)	Pricing (by 3-14-97)	Pricing On-site
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❑ ICE Passport	Unlimited 4 Days Conference (except Executive Conference)	select daily choices below	$995	$1,095
❑ General Conference	All General Conference Sessions (except Workshops)		$795	$895
❑ Executive Conference	April 7-Reception/Keynote April 8-Sessions Luncheon and Reception		$995	$1,095
❑ Half Day Tutorial	April 8	select from Box A below	$250	$300
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❑ Internet Market Outlook (presented by IDC)	April 8		$395	$495
❑ Exhibits/Internet Open/Keynotes Only Pass			FREE	$ 50

Box A Tutorial Selection - Tuesday April 8

❑ T-1	Building Internet Commerce Web Sites	full day
❑ T-2	Designing, Building & Maintaining an Enterprise Web Server	full day
❑ T-3	Corporate Networking to Support Internet & Intranet Apps	full day
❑ T-4	Introduction to Doing Business on the Net	half day am
❑ T-5	Intranet Design and Implementation	half day am
❑ T-6	Protecting Content in Cyberspace	half day am
❑ T-7	Measuring Web Marketing: Maximizing Advertising Dollars	half day am
❑ T-8	Internet Marketing – What Really Works	half day am
❑ T-9	Net Marketing – What Comes Next	half day pm
❑ T-10	Security Beyond the Internet	half day pm
❑ T-11	The Law and the Web	half day pm
❑ T-12	Advanced Program on Doing Business on the Net	half day pm

Box B Workshop Selection - April 8, 9,10, 11

❑ T-1	Internet Market Outlook	April 8	full day
❑ W-1	Lotus Domino for Enterprise Solutions	April 9	half day, am
❑ W-2	Lotus Domino for Solution Implementers	April 9	half day, pm
❑ S-1	General Conference Sessions	April 9	full day
❑ W-3	Netscape Strategies for a Corporate Intranet	April 10	half day, am
❑ W-4	Netscape Implementing a Corporate Intranet	April 10	half day, pm
❑ S-2	General Conference Sessions	April 10	full day
❑ W-5	Pulver.com – Internet Telephony	April 11	full day
❑ S-3	General Conference Sessions	April 11	full day

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Briefs

MULTIFACETED

Multifunctional products can perform two or more functions. For example, a printer could have fax and printing capabilities.

Projected U.S. multifunctional product shipments

1996	731,000
1997	1.48M
1998	2.21M
1999	2.67M

The Millennium mainframe validates trades made on the Chicago Mercantile Exchange floor

Amdahl rates a Buy

▶ *Chicago Exchange swaps IBM for competitor, boosts trading performance*

By Tim Ouellette

ONE RECENT TRANSACTION among the millions made at the Chicago Mercantile Exchange involved more than just pork belly futures.

The famous commodities market swapped an IBM machine for a Millennium CMOS mainframe from Amdahl Corp. to run a critical trade clearing system.

The clearing system guarantees that money — between $200 million and $300 million each business day — will change hands for each trade the famous yellow-jacketed Chicago traders make for pork belly futures, wheat crop options and foreign currency exchanges.

The new system reduced processing costs, sped up the trade clearing process and gave the exchange more flexibility to add processing power quickly.

"We needed cost-competitive [mainframe] capacity," said Mike Kelly, chief information officer at the exchange. "The differences between Amdahl and IBM were clearly in cost per MIPS."

MORE FLEXIBILITY

The Millennium, a four-processor model rated at 60 MIPS, beat out IBM's mainframe by costing more than $1,000 less for each MIPS of processing power.

The Millennium also gave the exchange the flexibility to expand processing power at a moment's notice.

For example, when the market hits a new trading peak, the system needs more processing power to clear all trades. (The last major trading peak was in 1994, when the government raised interest rates and 2.5 million trades flew back and forth across the exchange in one day.)

"Our markets are not predictable, and we have to lay in a lot of excess capacity in a flexible way, not by buying processors that will remain idle," Kelly said. "We do capacity planning from trading peak to trading peak, rather than from year to year."

Kelly worked out a deal for

Chicago Exchange, page 48

STORAGE SYSTEMS

HP DAT drive offers triple data storage

By Matt Hamblen

HEWLETT-PACKARD CO. has begun volume shipments of a digital audio tape (DAT) drive that can store 24G bytes of compressed data on one cassette. That gives DAT users three times the current capacity.

The Palo Alto, Calif.-based company's new HP SureStore DAT24 is further evidence of users' growing storage capacity demands, analysts said.

> "With the way storage is growing, 24G bytes is important"
> — Fara Yale, Dataquest

Innovation in tape storage is also a way for tape makers to fend off competition from other storage technologies such as CDs and disk drives, they said.

"With the way storage is growing, 24G bytes is important," said Fara Yale, a principal analyst at Dataquest in San Jose, Calif. Information systems departments have more Internet

Hewlett-Packard, page 48

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Chicago Exchange trades up

CONTINUED FROM PAGE 45

Amdahl to provide an additional processor on an emergency basis without payment, with an option for Kelly to return the processor within 30 days for free.

Amdahl's quicker processing has made the trade clearing system faster, which is important because trade clearing is now done on the same day, not as an overnight batch process.

"Amdahl has bought us 30 to 40 minutes of extra time in the same day now," Kelly said. "So we can pick later prices and have a more accurate view of the day's results."

The hardest part about abandoning the reliable IBM ma-

"The differences between Amdahl and IBM were clearly in cost per MIPS"

chine — although an IBM mainframe still acts as the Millennium's backup system — was familiarizing the trade clearing managers with Amdahl as a company.

That is why contract wins such as this are important for the Sunnyvale, Calif., firm, analysts said. Amdahl has refocused its business on services lately. It has seen its mainframe market share slip to 10%, behind IBM and surging Hitachi Data Systems Ltd. in San Jose, Calif.

"But Millennium, as a first-generation CMOS machine, is on par with IBM's latest third-generation machines," said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn.

So far, performance and reliability have met expectations.

"The Amdahl mainframe went up in December, and I am telling you it hasn't twitched," Kelly said. "But reliability is what we expect from this class of machine."

ALR follows Intel server trend

By April Jacobs

ADVANCED LOGIC RESEARCH Corp. (ALR) is trying to break in to the high-end Intel Corp.-based server market by offering a six-processor box at four-processor prices.

ALR in Irvine, Calif., recently announced its Revolution 6X6, which can support up to six 200-MHz Pentium Pro processors and features up to 512K bytes of RAM cache per processor. The server runs Microsoft Corp.'s Windows NT Server, Novell, Inc.'s NetWare, IBM's OS/2 and Santa Cruz, Calif.-based SCO, Inc.'s Unix.

But how the new server will fare is unclear. Jennifer Munson, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H., said ALR will be fighting an uphill battle against server giants, including Hewlett-Packard Co., IBM and Compaq Computer Corp.

"[ALR doesn't] even show up on the radar screen," Munson said. She said the company will likely start by selling to its small base of satisfied customers.

FULL SUPPORT

And ALR has a loyal following. Michael Black, vice president of sales and marketing at Datapoint Corp. in San Antonio, said his company has worked with ALR for several years to supply ALR servers to customers who run Datapoint's ArcNet network operating system.

"We have to be very comfortable with the people we're working with, and we have a lot of experience with multiprocessor systems, because [ArcNet] is brutal in terms of running down hardware," Black said. He said the Revolution 6X6 performed well but had some bus-related bottleneck problems.

"We've been very happy with the fact that [ALR] has been bringing technology to the market faster than anyone else and add to that a good capacity for storage and retrieval," he said.

The Revolution 6X6 costs $14,995 for a model that includes one 200-MHz Pentium Pro processor. It is due to ship next month. That compares with Compaq's ProLiant 5000, which supports up to four Pentium Pros and costs about $13,920 for a single-processor model. A six-processor model costs $36,000.

ALR ships server management software, but that is still proprietary at this point, officials said.

REVOLUTION 6X6 SERVER FEATURES

- Six-way CPU-bus clustering technology
- Up to 300G bytes of hot-swappable drive storage
- Support for up to six 200-MHz Pentium processors.

HP triples data storage

CONTINUED FROM PAGE 45

downloads and larger files due to sophisticated graphics and video that vastly increase storage demand. Plus, with systems working around the clock, the window for taking time to run backup procedures is shrinking, she said.

Some end users may be pleased to find expanded capacity for the relatively low cost of DAT, analysts said. Others are skeptical of the DAT offering.

"Bigger drives are overrated," said Jeff Davis, manager of IS at Spaulding Sports Worldwide in Chicopee, Mass.

A 24G-byte, low-cost DAT product makes sense for backing up notebooks and backing up dats at small companies, Davis said. But using DAT to back up large LANs would make less sense because the system restore time is slower with DAT than with digital linear tape and other storage technologies, he said.

HP SURESTORE DAT24

Capacity: 24G bytes compressed per tape

Transfer rate: 7.2G bytes per hour

Price: $2,101 (external)

Analysts said a big advantage of DAT technology is its low price compared with other tape technologies.

HP is selling the external version of the DAT24 for $2,101; five cassettes cost $200. Sony Electronics, Inc. in Tokyo recently announced a 24G-byte DAT drive, but the company hasn't begun volume shipments in the U.S., analysts said.

HP, Sony and Seagate Technology, Inc. in Scotts Valley, Calif., control the lion's share of the DAT market, analysts said.

Analysts said the much-touted Digital Video Disc (DVD) RAM may have trouble keeping up with 24G-byte DAT products. When DVD drives appear, possibly next year, observers said they may cost $1,000 and will offer only 2.7G bytes of capacity. DVD is a disc that is read with a laser; DAT includes tape that is read electromagnetically.

Of all tape storage drives installed in the U.S., there are about 4.4 million DAT drives, second to the 12.8 million ¼-in. dats cartridge drives, according to analyst Michael Peterson, president of Strategic Research, Inc. in Santa Barbara, Calif.

HP is also announcing TapeAlert to allow network administrators at local and remote sites to monitor DAT storage problems, such as dirty tape heads and worn tape. A warning of DAT problems can be sent from TapeAlert to an administrator by electronic mail or pager.

TapeAlert is firmware, or software contained in a memory chip that holds its value without electrical power.

Motorola preps 300-MHz PowerPC chip

▶ *Apple expected to tap 603E series for its line of PowerMacs, PowerBooks*

By Kristi Essick
LONDON

MOTOROLA, INC. next month plans to release a 300-MHz 603E PowerPC microprocessor, which Apple Computer, Inc. is expected to use in future PowerMacintosh and PowerBook models.

The Schaumberg, Ill., company plans to unveil the chips at CeBit next month in Hannover, Germany, a Motorola executive said last week.

Apple hasn't publicly said it will upgrade its desktop and notebooks to the processor, but Paul Clark, European marketing and communications manager for Motorola's RISC group, said such a deal is expected.

The 603 series chip will be the fastest chip Motorola has ever released.

Motorola has previously announced its plans to manufacture a 300-MHz 603 microprocessor, but until now the company hasn't indicated when the chip would be available or which systems manufacturers would use it.

UP FOR ADOPTION

Clark said Apple is considering building a system around a forthcoming version of Motorola's 620 PowerPC processor. Groupe Bull is expected to adopt the upgraded 620 chips in its line of Unix servers.

Apple recently announced the PowerBook 3400 based on Motorola's 240-MHz 603E chip and the PowerMacintosh 9600/233 based on the 233-MHz 604E processor. Apple in Cupertino, Calif., is positioning the high-speed notebook and desktop as strong rivals to Intel Corp.'s Pentium-based PCs, said Peter Lunn, PowerBook business and marketing manager for Apple U.K. and Ireland Ltd.

Essick writes for the IDG News Service in London.

From the editors of
COMPUTERWORLD

Intranets

A monthly look at Web developments behind the firewall

Volume 2 • Number 1 • February 24, 1997

ILLUSTRATION BY JOHN BLECK

From the editors of
COMPUTERWORLD
Intranets
A monthly look at Web developments behind the firewall
Volume 2 • Number 1 • February 24, 1997

WEB DATA WAREHOUSES

Data, free-for-all?

Web-enabling your warehouse is cheap and simplifies data access. Is there any reason not to do it? No, as long as you've resolved security and bandwidth issues.

By Alice LaPlante

If you've built a data warehouse in the past five years, there's a good chance you're about to make the same decision Brent Brough just did. Namely, that it's time to Web-enable your warehouse.

And like Brough, a business analyst for the Workers Compensation Fund (WCF) of Utah in Salt Lake City, you'll probably find the project extraordinarily easy to cost-justify.

After all, the hard work is done. Your warehouse is already up and running. Your corporate intranet is in place. And almost certainly, your users are familiar with Web browsers, so you can use that model and avoid all the technical issues associated with client/server data access tools.

"We didn't want to have to include every printer driver in the world in our client software. Neither did we want to have to train and support external users," says Brough, whose Adabas D data mart had generated paper reports for WCF customers on employee claims, losses and statistics on work-related injuries and illnesses since being built on a Sun Microsystems, Inc. SPARCstation last year. By creating online access to it via the Web, "we don't care what hardware, software or printer [users are] using. We don't even have to *know*," he says.

Welcome to the latest use for the Web, inside and outside the corporation: data warehouse access. If it sounds like a panacea for all your data woes, it's not — though it might be a way to get more use from the warehouses you worked so hard to cost-justify. Its own price tag depends on the infrastructure you already have, and hurdles remain — security and bandwidth, as always, among them. And some users will still need the more sophisticated client/server access

Continued on page 2

Continued from page 1

tools for the forseeable future But data warehouse gurus are promising, once again, that the promised land of easy, universal access to timely corporate data is in sight.

"What we see everywhere is a trend toward supplanting traditional client/server access with Internet and Web technologies," says Richard D. Hackathorn, president of Bolder Technology, Inc., a consulting firm based in Boulder, Colo.

In fact, the Patricia Seybold Group believes that by 1998, a full 50% of all corporate database queries will be executed by Web browsers.

Besides being easy to use and endemically cross-platform, Web-enabled data access is getting easier to build.

In the past, Brough says, building a Web application would have meant mastering Java, CGI or Perl — not the most intuitive skills to pick up quickly, he says. But new Web tools are making it possible to Web-enable warehouses without many learning curve headaches. In Brough's case, a Software AG product called I Express promises to provide automatic Web links to the existing WCF warehouse application programming interfaces, eliminating the need for Brough's team to do extensive programming in Internet scripting or interface languages.

Beyond these considerations, the cost advantages of Web warehouses have yet to be fully understood.

Cost-effective?

The cost of designing and building the warehouse itself remains constant, but costs shift from the client to the server when the Web is used as the primary communications pipeline, says Frank Gillette, a senior analyst for data warehousing at the business intelligence service of Hurwitz Group, Inc. in Newton, Mass. That means supporting highly robust servers that can sustain unlimited access points and possibly a tremendous volume of simultaneous hits.

"If you're just starting out, with no internal network and no internal Web expertise, the costs and the risks add up. But if you've got the infrastructure in place, it could be very cost-effective," he says.

Having a solid infrastructure goes beyond costs, too: Robustness and reliability are at stake. After all, if you are asking a broader population of users to depend on the Web for critical business functions, it had better be there when they need it. Stanford University, whose 20,000 users can access warehouses with their Web browsers, has written an application that checks the campus Web every 15 minutes to make sure it's up and responding quickly to user requests. All performance and reliability results are logged so systems analyst Patrick Nolan and his staff can perform downtime analysis over an extended period, thus "telling us if we need to be concerned about capacity or performance," he says.

Capacity is another twist in the road. The irony of getting good results from your initial foray into a Web warehouse, Hackathorn says, is that "you're likely to be successful. And that's when it gets hard." Supporting 20 or 50 or even 100 browser users is cheap and fairly simple, he says, but "after that, things escalate rapidly, and

Adrienne Tannenbaum at Database Design Solutions hosts our forum on Web data warehousing.
www.computerworld.com/intranets

Annual growth rate of data warehouse software revenues through year 2000
30.8%

Average return on investment in data warehouse technology over three years

401%

you will probably have to make some pretty significant upgrades to your network and Web server infrastructure when you start getting audiences of 1,000 or 10,000 users."

Security, of course, is another major burdle, whether you're providing access to internal or external users or both. Stanford, which makes data available to both, has its own IP bub so it can perform individual machine IP checks and can use the grant/revoke mechanisms in Sybase, Inc. and Oracle Corp. databases using user identification passwords with file control. The WCF, besides needing a foolproof firewall to protect the data, will need protection for electronic commerce transactions so policyholders can eventually pay bills online using credit cards. "Like everyone else, we're looking at installing Secure Socket Layers," Brough says.

But some security bazards and their solutions go beyond building firewalls and encrypting data. For example, what if savvy users pull together data — all of it seemingly innocuous on its own — from other sources, internal and external, to come up with some very damaging and confidential knowledge of your business? "This is a very serious concern," Gillette says.

Average number of Web servers sold for corporate intranet applications in 1996

214,000

If information bandits have ill intent, even honest users can become intruders of a sort. Idiosyncrasies in the information and, therefore, underlying business processes become mucb more apparent, and such things as data quality, problem logic and disagreements about business operations are exposed for everyone to see.

Source: All International Data Corp. research except * — Patricia Seybold Group

"When you open your warehouse up to the Web, you are revealing all to a much larger audience," Gillette warns. "You might not initially intend to show it to that larger audience. But inevitably, business pressure will come: People will say, 'Why not give me a password just so I can look?' And you think, why not?"

Average initial investment in data warehousing per corporate customer

$2.2M

Deja Vu All Over Again

Despite these obstacles, users are finding the Web is the way to go. For example, Stanford's 20,000 users made the goal of providing universal access to a growing number of campus warehouses prohibitively expensive, systems analyst Nolan says — that is, until a Web connection was forged.

Today, the university's Sun SPARCstation Web server connects to the campuswide TCP/IP backbone and accesses a Sybase data warehouse running Sybase SQL Server. Thus, any user who logs on to the Stanford Web, no matter what type of device he happens to be using, can peruse a variety of data sources and look up names of faculty, students and staff members; check on course offerings; or find a room number for an event or class. Stanford's meta data has also been placed on the Web so authorized users can get queries cross-referenced across disparate departmental data warehouses.

Nolan uses one of the myriad new tool sets that provide Web capabilities to existing data warehouses — Sybase's Web.SQL, which manages

Continued on page 4

Continued from page 1

tools for the forseeable future. But data warehouse gurus are promising, once again, that the promised land of easy, universal access to timely corporate data is in sight.

"What we see everywhere is a trend toward supplanting traditional client/server access with Internet and Web technologies," says Richard D. Hackathorn, president of Bolder Technology, Inc., a consulting firm based in Boulder, Colo.

In fact, the Patricia Seybold Group believes that by 1998, a full 50% of all corporate database queries will be executed by Web browsers.

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In the past, Brough says, building a Web application would have meant mastering Java, CGI or Perl — not the most intuitive skills to pick up quickly, he says. But new Web tools are making it possible to Web-enable warehouses without many learning curve headaches. In Brough's case, a Software AG product called I-Express promises to provide automatic Web links to the existing WCF warehouse application programming interfaces, eliminating the need for Brough's team to do extensive programming in Internet scripting or interface languages.

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WHAT'S ONLINE

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Hang on to those client/server tools — for now

Many IS professionals and database experts agree that Web access will eventually become a standard feature of corporate data warehouses. But when that will happen at any given firm depends on several factors, so don't give up the ghost on traditional client/server access tools until then.

Organizations that want or need to extend data warehouse access to parties outside the company quickly went to the Web, notes Alan Paller, director of research and education at the Data Warehouse Institute in Bethesda, Md.

"The huge cost and difficulty of managing client software on external customers' and suppliers' computers made this decision a no-brainer," he says. One such organization: the Workers Compensation Fund (WCF). Offering external users even basic access would have been too expensive and logistically chaotic to implement using a traditional client/server architecture, says Brent Brough, a business analyst at the WCF.

Companies whose data warehouse applications serve a large group of internal users have also found the case for moving to the Web quite compelling, Paller says. Take CompuCom Systems, Inc., a Dallas-based value-added reseller that launched its data warehouse in January 1996 and added Web access four months later (see story page 6). Although about 500 internal users were already depending on the Business Objects S.A. client/server tool to query a Sybase data warehouse for customer marketing and product information, making the warehouse available via the

Average return on investment in data warehouse technology over three years:
401%

you will probably have to make some pretty significant upgrades to your network and Web server infrastructure when you start getting audiences of 1,000 or 10,000 users."

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But some security hazards and their solutions go beyond building firewalls and encrypting data. For example, what if savvy users pull together data — all of it seemingly innocuous on its own — from other sources, internal and external, to come up with some very damaging and confidential knowledge of your business? "This is a very serious concern," Gillette says.

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Average number of Web servers sold for Internet use in 1996
81,000

Source: All International Data Corp. research except: — Patricia Seybold Group

Deja Vu All Over Again

Despite these obstacles, users are finding the Web is the way to go. For example, Stanford's 20,000 users made the goal of providing universal access to a growing number of campus warehouses prohibitively expensive, systems analyst Nolan says — that is, until a Web connection was forged.

Average number of all database queries that will be executed by Web browsers by 1998:
50%

Today, the university's Sun SPARCstation Web server connects to the campuswide TCP/IP backbone and accesses a Sybase data warehouse running Sybase SQL Server. Thus any user who logs on to the Stanford Web, no matter what type of device he happens to be using, can peruse a variety of data sources and look up names of faculty, students and staff members; check on course offerings; or find a room number for an event or class. Stanford's meta data has also been placed on the Web so authorized users can get queries cross-referenced across disparate departmental data warehouses.

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Continued on page 4

Average annual investment in data warehousing per corporate customer:
$2.2M

Web and, eventually, the CompuCom intranet "has ended up serving a whole new class of user," says Darrell Piat, CompuCom's director of advanced technologies.

Data warehouses that serve just a small pool of internal users may feel less urgency to move to the Web, but Paller says the question will soon be moot because most warehouse vendors are scrambling to incorporate Web-enabling features into their products. And a plethora of third-party tools are also becoming readily available (see Hot Picks, page 4).

But while browser functionality will be enough for most warehouse users, at least some will require the more sophisticated drill-down analysis and transactional features of full-blown client/server tools, says Richard D. Hackathorn, president of consulting firm Bolder Technology. He says he sees most companies setting up a two-tier access strategy that gives the enhanced functionality to those who need it.

"We find that browsers meet the needs of 80% of our users," says Patrick Nolan, a systems integrator at Stanford University who has made several reference data warehouses available to Stanford's 20,000-user Web population. For the remaining 20%, Stanford installs Brio Technology, Inc.'s BrioQuery and BusinessObjects.

At John Deere Insurance Group, systems analyst Greg Kinman believes Web-enabling the SAS data mart is a first step toward cost reduction in his firm's portable computing operations. "When anyone in the field can dial in from anywhere, no matter what hardware and software they happen to be using, we'll be able to dramatically reduce our field maintenance and support costs," says Kinman, in charge of Deere's intranet warehouse project. — Alice LaPlante

Continued from page 3

the server connection, parses Web-page-embedded SQL queries to the server and formats returned results from the database. Because the Sybase tool automatically handles the more tedious overhead chores, such as writing code to handle those functions for each Web page, all Stanford programmers needed to do was embed SQL statements in any Web page that accessed the database.

Total time to Web-enable the data warehouses: just two months. And the cost was minimal. "Most of your expenses are involved in building the initial warehouse," Nolan says. "We were able to adapt them to the Web in no time at all."

But until Web tools mature, most companies will have some users who still need the more sophisticated drill-down analysis and ad-hoc querying capabilities that client/server products offer, Bolder Technology's Hackathorn stresses.

At MSAS Cargo International, Inc., an international freight forwarding firm in Burlingame, Calif., the number of database queries executed by Web browsers is already hovering at 80%, says Eugene Poznikov, electronic data interchange coordinator. "We simply can't afford to write a new report or application every time a customer requests a different perspective of the data," notes Poznikov, who has been beta-testing Interweave Software Corp.'s Web warehouse software, DS Modeler, and DS Server, which gives intranet browsers access to various MSAS distributed IBM AS/400-based warehouses. "Neither do we have time to train people on the more complicated access tools. We're a small team."

The WCF provides another typical case in point. Theoretically, warehouse data was already available in its Adabas D data mart, which used Software AG's SourcePoint to automatically extract data from an Adabas C transactional database. Yet the client software used to query the mart was less than intuitive. It needed to be purchased for and installed on the desktops of all users who requested querying rights. And then there were the usual training and support issues. So all but the most sophisticated WCF users ended up still going to the information systems group for ad-hoc querying or even customized reports. Web access eliminates these problems and more, Brough says.

At John Deere Insurance Group, it is the portable access promised by Web technology that has Greg Kinman the most enthused. Kinman, a systems analyst at the Moline, Ill.-based subsidiary of the equipment manufacturing giant, is in charge of a simultaneous effort to build a robust intranet and to make an existing SAS Institute, Inc.-based warehouse acces-

Continued on page 9

Hot picks

EXPLAINER

A sampling of products data warehouse managers, analysts are high on

- **brio.web.warehouse includes three components: brio.query.server, which performs unattended processing of data warehouse data via the Web or corporate intranet; brio.quickview, which delivers snapshot reports of warehouse data to users via Web browsers; and brio.insight, which gives [illegible] interactive control of reports within their Web browsers, even when disconnected from the network. All can be used with Brio's desktop online analytical processing (OLAP) query tool, Brioquery Enterprise.**
  Brio Technology, Inc. (415) 856-8[illegible]
  Palo Alto, Calif. www.brio.com (demos)

- **DSS Web lets users perform dynamic OLAP queries in real time with any Web browser against relational data warehouses, via a corporate intranet or the Web.**
  MicroStrategy, Inc. (703) 848-8600
  Vienna, Va. info@strategy.com (demos)

- **htmSQL allows developers to integrate SAS data into Web pages using SQL queries embedded in HTML. Queries are processed in real time.**
  SAS Institute, Inc. (919) 677-8000
  Cary, N.C. www.sas.com (demos)

- **IQ/LiveWeb is an intranet database query and reporting tool that lets companies offer data warehouse access to internal and external users. Users can build queries and reports from Windows clients; publish reports on Unix or Windows NT servers; and request and view warehouse data using a Web browser.**
  IQ Software Corp. (800) 458-0388
  Norcross, Ga. www.iqsc.com (demos)

- **OpenWarehouse Web [illegible] version of HP's intelligent Warehouse manager [illegible] security and server platform, a set [illegible] and Professional Services consulting [illegible]**
  Hewlett-Packard Co.
  Cupertino, Calif. www.[illegible]

- **Oracle Applications Data Warehouse allows users to create data warehouses from transactions generated by Oracle database applications, which can then be accessed by Web browsers and most Web query and decision-support tools.**
  Oracle Corp. (415) [illegible]-7000
  Redwood Shores, Calif. www.oracle.com

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CompuCom: A Late Bloomer That Quickly Sprouted

Back in September 1995, Dallas-based CompuCom Systems, Inc., despite being a $1.4 billion value-added reseller in the high-tech computer hardware, software and services market, had no data warehouse. No Web site. No way for company sales reps or business managers to run ad-hoc queries against corporate sales and product databases. And to ask IS to generate a customized report took a staggering two weeks.

All this at a time when the systems integrator and technical services firm was growing at a 28% compound annual revenue growth rate. Hardly the time to permit information gridlock.

Darrell Piatt, director of advanced technologies at CompuCom, says building a data warehouse was the obvious solution.

So within just four months — by January 1996 — CompuCom had a 10G-byte Sybase SQL data warehouse successfully installed on a Hewlett-Packard Co. HP 9000 server. It allows users to retrieve everything from historical information on customer accounts to current product pricing, order status, distribution and inventory information using Business Objects S.A.'s BusinessObjects query tool. The users were ecstatic, Piatt says, though access was initially limited to employees with networked computers on their desktops. Once word got out in the field about the project, his staff would get calls on early as 7:30 a.m. from field sales reps calling on car phones on their way to meetings, requesting immediate updates from the warehouse on customer account activities.

"Sometimes we even sent out sales figures over text pagers to make sure they get them in time," he chuckles. Eventually, access to the data warehouse was extended to mobile laptop users.

So far, so good. But then, just as the initial data warehouse was going live, CompuCom bid on a major contract to provide California's city, county and state agencies and educational institutions with computer hardware, software and services. CompuCom would be required to run two computer storefronts — one in San Francisco and one in Sacramento — as well as provide online access to pricing and product information and an electronic catalog and order-tracking system that any qualified state employee could access from any location.

PHOTO BY KEITH SAMUDIN

CompuCom's Darrell Piatt (left) and Kent Sakuda: Most routine queries are now answered via the Web warehouse

This presented a challenge: Although CompuCom had previously created a proprietary Lotus Development Corp. Notes-based procurement system to help larger corporate customers expedite internal purchasing approval processes, that required installing client software on all desktops that would be used in the process, which meant adhering to strict hardware, software and network standards. "We realized that only the Internet provided the universal sort of access that the California contract required," Piatt says.

CompuCom won the California bid, and the Web-based warehouse went live in April 1996. The responses have been "very positive," says Paul Apfel, program manager for the department of general services for the state of California in Sacramento. "There's a learning curve to everything new, of course," he says. "But we're getting constant feedback that tells us our users are very happy."

The initial data warehouse cost approximately $800,000, including all hardware, software and development labor, Piatt says. To build the California Web link, CompuCom spent an additional $100,000. That investment is now being leveraged as other large CompuCom clients are offered similar electronic hookups. As of January 1997, more than 40 CompuCom corporate customers have their personalized catalogs available via the Internet. And by the end of this month, CompuCom suppliers will be able to log on to a secure Web page and access detailed information on sales of their products. Now all data is also available to employees via the company intranet.

The benefits that accrue to CompuCom, other than the chance to win more business through demonstrating superior customer service, include cutting back on "call center" operations. Previously, the only way customers could get information on products, prices and delivery dates was to personally call a member of their account team. Today, Piatt says, most of the more mation inquiries are simply answered electronically via the Web warehouse. This does not mean, however, that CompuCom has laid off any workers or otherwise scaled back operations.

"Right now we're experiencing a 40% annual growth rate," Piatt points out. "We're not looking at head count reduction so much as finding ways to add business volume without unduly increasing our overhead."

— Alice LaPlante

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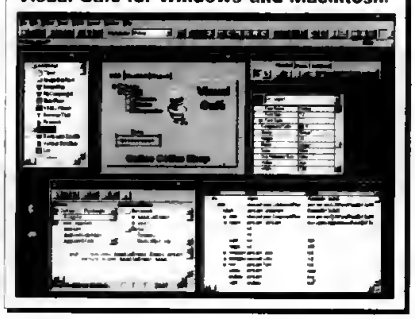

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Continued from page 4

sible through it. Both should be operational by the end of the quarter.

Deere has had multiple SAS data marts up and running for more than a year on a Microsoft Corp. Windows 95 server that feeds OS/2 clients via a Novell, Inc. network. These application-specific marts are culled from a variety of mainframe legacy databases, providing access to financial and actuary numbers as well as corporate marketing, underwriting and human resources data. The biggest advantage to making these data stores available via a Deere intranet will be to provide easier access to the 150 laptop-toting Deere salespeople who spend most of their time on the road, Kinman says. Later, he adds, Deere plans to allow direct hookups with company clients and suppliers.

Still, experts warn about making the mistake of viewing the Web as a panacea for all your data access woes. One of them is Adrienne Tannenbaum, president of Database Design Solutions, Inc. in Bernardsville, N.J., an organization specializing in database "revitalization" issues.

Before Web-enabling your warehouse ...

Assess the success of your existing warehouse effort.

Define your target user population.

Ponder the security ramifications of opening up access.

Analyze the organizational implications of universal access.

Simply Web-enabling an existing warehouse isn't going to solve all potential data access problems, Tannenbaum says. But where the data is already in electronic form, is reliable, is updated in a timely manner and is certifiably clean, then opening up access to it via a Web browser is often an excellent idea, she says. Indeed, Tannenbaum claims one of the biggest motivations to making a warehouse available via the Web is to leverage the often hefty investments in data warehousing that have seemingly come to little fruition. "A common complaint is that we've invested all these millions of dollars in this warehouse, but no one seems to know about it," she says.

Yet there are challenges to executing Web access, as even the enthusiastic Brough acknowledges. "It's hard sometimes to separate the hype from what's real," he says. "But there's a lot of bright minds working on a solution, and we believe the kinks will all get worked out."

LaPlante is a freelance writer in Woodside, Calif.

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WEB SITES/NEWSGROUPS

Data Warehousing Information Center
pwp.starnetinc.com/larryp/index.html

Data Warehousing on the Internet
www.datawarehousing.com

Data Warehousing List Server
www.datawarehousing.com/list.html

Data Warehousing Forum
MicroStrategy, Inc.
www.strategy.com/wsx_dwf1.htm

PUBLICATIONS

Data Warehousing on the Internet
Thomas C. Hammergren; Thomson Computer Press, 1997

The Seven Deadly Sins of Data Warehousing
Doug Hackney; Addison Wesley Longman, 1997

"Taking Data Warehouse Applications to the Desktop (But Whose Desk?)"
Jill Dyche, Baseline Consulting
www.baseline-consulting.com/tdwacm.htm

Corporate Internet Planning Guide
Richard J. Gascoyne and Kerry Raczkoski, 228 pages, $29.95. Van Nostrand Reinhold, 1997
www.thomson.com/vnr/gascoyne.html

Building the Corporate Internet
IDG Corp., $30.95. John Wiley & Sons. A 12-step guide to building an intranet, from deciding whether to go for it to implementing and managing it.

ASSOCIATIONS

The International Data Warehousing Association
P.O. Box 2081, Andover, Mass. 01810 (508) 470-3880
www.idwa.org

The Data Warehousing Institute
9160 Guilford Drive #200, Columbia, Md. 20879
(301) 229-1002 (www.dw-institute.com)

PROJECT: Monsanto Co.

By Steve Alexander

Monsanto Co. has been testing an intranet front end to its financial data warehouse since last June. The St. Louis-based chemical firm plans an enterprisewide rollout by year's end and, eventually, data warehouses with logistics and procurement information. For now, the intranet gives 20 financial analysts simple, fast access to information they need. "If the information you need for decision-making is right at your fingertips, then you can focus more time and effort on the analysis of the information," explains Bipin Junnarkar, director of knowledge management architecture at Monsanto. He provides further details of the project:

Why do it?

To speed the delivery of financial information that must be sifted by Monsanto financial analysts prior to being given to decision makers.

How it works

A user requests a report via a Microsoft Corp. Internet Explorer browser. A Silicon Graphics, Inc. (SGI) server passes the request to a MicroStrategy, Inc. DSS Web server running on a Windows NT machine. The server acts as an interface between the SGI server and a DSS server, which also runs on an NT machine. The DSS server then communicates with the data warehouse, which runs on an Oracle Corp. database on a Digital Equipment Corp. Alpha server.

What's different

The intranet doesn't require the installation of client software on user desktops. Also, traditional client/server data warehouses don't let users share data analysis. Eventually the intranet will, possibly via Lotus Development Corp.'s Notes.

Kinds of queries posted

The MicroStrategy software restricts users to a standard report they can drill down into for more information. Ad-hoc queries can be made only with the existing client/server system.

Decisions supported

"A user might be trying to use the data warehouse via the intranet to look at all the costs associated with product lines in different geographical areas. He or she might look at one product line and see how much profitability there is in Brazil and what the costs are of getting the product to market and compare that with the same thing in Australia or the Pacific Rim," Junnarkar says.

Monsanto's Bipin Junnarkar: The major change is in how many people really get to look at the data and try to make sense out of it.'

PHOTO BY ROGER REHAEN

Measuring ROI

The firm decided at the outset that it would not justify the project based on its dollar benefits. Instead, it has pursued the project in the belief that its value to the company extends beyond data warehouse applications.

Technical challenges

Security. Monsanto plans to have three levels of access on the financial data warehouse: top management, top executives in the business units and analysts in specific business units. No additional tools are required to set up the three tiers because all access is controlled at the database level of security.

Cost

The company wouldn't disclose specific details. The data warehouse project is said to have had "significant cost." Intranet costs for the data warehousing project were not split out because the intranet is being built for other company uses.

Biggest surprises

How fast it was to install the application (two weeks) and how easy it is to use the warehouse via the intranet.

Advice

Develop an intranet business strategy for delivering and integrating data rather than jumping blindly into an intranet project because it's trendy. Enroll data warehouse users up front. Technology is evolving rapidly and looks promising.

Alexander is a freelance writer in Edina, Minn.

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BOTH PLATFORMS

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SHORTS

MMX notebooks

NEC Computer Systems in Mountain View, Calif., has announced two notebook computer lines: the Versa 2600 with full multimedia features and the low-end Versa 2500. The Versa 2600 has a 133- or 150-MHz Pentium MMX chip and a 1.44G-byte hard drive. Pricing starts at $2,399. The Versa 2500 has n 133-MHz processor and n 1.08G-byte hard drive. It costs $1,999.

PC-based storage

Western Digital Corp. in Irvine, Calif., has announced Storage Data Acceleration (SDX), a new technology for increasing the performance of removable media storage peripherals such as CD-ROM drives. An SDX interface is used to connect SDX peripherals to all Western Digital Enhanced Integrated Drive Electronics (EIDE) hard drives. The connection is made via a 10-pin SDX cable instead of a 40-pin EIDE connector. Products should ship before June, according to Western Digital.

Intel adds video mail

Intel Corp. officials announced enhancements to ProShare videoconferencing products that allow video mail to be left on a desktop computer. The Hillsboro, Ore., firm said the upgrades to System 200 will cost $179 or $1,499 for a new user. Recording and playback of videoconferences will be possible with the software. That feature should be useful to global companies that work in multiple time zones.

Tape silo software

StorageCenter, storage management software from Software Partners/32, Inc. in Topsfield, Mass., now supports Storage Technology Corp.'s Automated Cartridge System Library Software (ACSLS). That means StorageCenter users can manage large-scale tape libraries found in major data centers that run StorageTek's Nearline tape systems. ACSLS support is a $19,000 option to StorageCenter.

Cluster-ready RAID

Storage Dimensions, Inc. in Milpitas, Calif., is shipping the SuperFlex 9000, a cluster-capable RAID disk array for Sun Microsystems, Inc. Solaris server clusters. The product, which features dual RAID controllers, can be used with the Qualix Group's QualixHA clustering software. Pricing ranges from $23,655 to $36,555 for up to 54G bytes of data storage capacity.

NEW PRODUCTS

INTEGRATED TECHNOLOGY USA, INC. has announced CompuNet 2000, a PC keyboard telephone with Internet capabilities.

According to the Teaneck, N.J., company, the product can be used with Internet telephony software to let users call worldwide for the price of a local phone call. Internet phone calls can be conferenced with conventional phone calls.

CompuNet 2000 costs $239.95.

Integrated Technology USA
(201) 907-0344
www.iti2000.com

VINCA CORP. has announced StandbyServer Many-to-One for NetWare, n real-time mirroring product that lets users protect multiple Novell, Inc. NetWare servers with one standby machine.

According to the Orem, Utah, company, the product provides flexibility for backing up data and saving space.

StandbyServer Many-to-One for NetWare costs $6,999.

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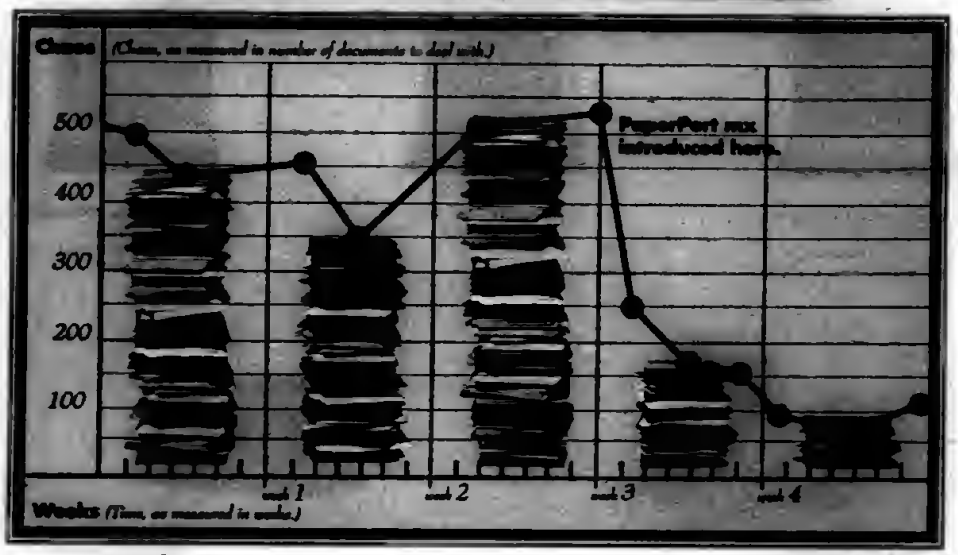
THE BUSINESS STRESS-REDUCTION INDEX



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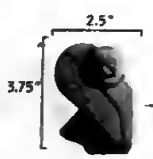

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Software

Briefs

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Worldwide data mining software revenue (includes license and maintenance revenue)

1995	$54M
1996	$90M*
1997	$123M*
1998	$160M*
1999	$200M*

Query tools yield 'net data

By Craig Stedman

DEVELOPERS OF desktop query tools are starting to deliver on promises to tie their software to the Internet so remote users can get at corporate decision-support data more easily. But most vendors are still months away from providing full browser-based querying.

PRODUCTS ON THE WAY

The products that are beginning to hit the streets are primarily static and enable end users to read canned reports via World Wide Web browsers.

That should be enough for some customers, but others said their remote users need the dynamic query capabilities that are still to come. For example, Premera, a $1.4 billion health insurance company in Seattle, wants to use the Web to spread decision-support tools to its field agents and external clients such as administrators at hospitals. But canned reports alone would be too restrictive, said Guy Höllingbury, a technology specialist at Premera.

"It's not always possible to think in advance about what our users want to look for and how they want to slice and dice it," Hollingbury said. "We don't want to put any roadblocks in their way [by just providing static reports]."

Premera is putting together a Web infrastructure and then

Ties to 'net, page 54

Start-up vows: One interface, all databases

By Lisa Picarille

TOPTIER, INC. is trying to streamline the process of letting users access disparate corporate databases from one user interface. The San Jose, Calif.-based start-up software company unveiled its TopTier family of products earlier this month at Demo 97 in Indian Wells, Calif.

The TopTier products will let users access a variety of database information via the Internet, the World Wide Web or a LAN without having to

Start-up, page 54

HP helps call centers pull in queries from 'net

By Jaikumar Vijayan

HEWLETT-PACKARD CO. has announced an enhanced version of its Customer Contact Manager middleware that integrates the Internet with telephony-based customer service offerings.

Service businesses such as banks, financial institutions and health care organizations can use the software to receive and resolve customer queries as easily over the Internet as they can via telephone, officials at Palo Alto, Calif.-based HP said.

ANOTHER OPTION

For example, bank customers can use their institution's World Wide Web page to look for account information and make cash transfers. When they want more information or need assistance filling out a form, they can click on "call me now," fill in the required call-back information and click on "submit."

HP's new middleware routes requests to a customer service representative, who can contact the customer via conventional phone, Internet Relay Chat or Internet phone.

Such a capability is important for organizations that see the Web as a new channel for pro-

Call centers, page 54

HP's Customer Contact Manager 4.0

What it does: Integrates telephony-based customer service on the Web

What it means: Customer queries can be received and resolved as easily over the Internet as they are over the phone

How it works: A customer's query from the Web is routed to customer service representatives, who then contact customers via telephone, Internet Relay Chat or Internet phone

FRANKLY SPEAKING

FrankenGates and Scott-ula

FRANK HAYES

STAR WARS, that epitome of high-tech heroics, is back again. And no doubt the folks at Microsoft and Sun Microsystems are daydreaming about blasting away at the competition's Death Star — whatever that happens to be.

But from the way they're treating Java users, you'd think Microsoft's Bill Gates and Sun's Scott McNealy have been watching old monster movies instead.

Microsoft, taking its cue from *Frankenstein*, has stitched together its own version of Java using pieces it dug up from Visual Basic and Windows. Lightning strikes at midnight. Dr. FrankenGates declares, "It's alive!" and the monster does indeed come to life.

Trouble is, just like in the old movie, this FrankenJava couldn't be mistaken for anything but a freak once it gets into the light of day. It runs some Java programs that shouldn't run. Certain basic Java features don't work properly. And it has grafted-on elements such as ActiveX that won't

Frankly Speaking, page 54

Ties to 'net delivered

CONTINUED FROM PAGE 53

will wait for Toronto-based Speedware Corp. to deliver a full thin-client version of its Esperant query tool, Hollingbury said. Giving hospitals and doctors querying abilities is critical as Premera moves to the managed-care business model, he added. "We need to help them control costs, or they're going to go out of business pretty quickly," Hollingbury said.

QUERY TOOLS

TOOL PARADE

Brio Technology, Inc. in Palo Alto, Calif., broke out of the vendor pack first by delivering an interactive Web version of its query and reporting software in November [CW, Nov. 11]. But others are starting to respond.

IQ Software Corp. in Norcross, Ga., last week announced a version of its IQ/LiveWeb tool that frees users from having to manually code the programs needed to put a Web browser face on reports. That will ship in March, and ad hoc query support will be added in June, IQ Software officials said.

Also last week, Cognos, Inc. in Ottawa started beta-testing a release of its Impromptu software that provides Web access to reports. Impromptu 4.0 is due to ship in late May and will be followed late this year by full querying from a browser, Cognos officials said.

Business Objects, Inc. in San Jose, which already supports static report viewing in its namesake software, plans by midyear to introduce a Java-based interactive query tool for the Web. Speedware officials said the company expects to deliver a read-only Web tool by midyear and full thin-client code late this year.

The Canadian Agriculture Ministry hopes to use Cognos' upcoming Web-based tools to enable federal and provincial government officials to run queries against data from an income protection program for farmers and other agricultural producers.

Queries get funneled through information systems now and can take a week to run, said Mark MacIver, a technical architect for the Winnipeg, Manitoba-based department that manages the program. Web-based queries "would be faster for the users, and we wouldn't have to tie up our programmers writing all these reports," he said.

Call centers can pull in 'net

CONTINUED FROM PAGE 53

viding customer service and contact, analysts said.

"What we are seeing in the customer support area is the desire to use multiple means of contact" with the customer, said Hugh Bishop, an analyst at Aberdeen Group, Inc. in Boston.

"It used to be that you had to go to a store directly if you wanted support. Then people started offering service over the telephone. Now they want to augment that with the Internet," Bishop said.

Blue Cross of California plans to use the customer service software. The company is upgrading its call centers to let doctors and clients get the same kind of service over the Internet that they get via the phone, electronic mail and fax.

"We are taking the same functionality that is available in our voice response units and putting it on the Internet," said George Steinhoff, vice president of group systems at Blue Cross in Woodland Hills, Calif. So, Blue Cross customers who want health care eligibility information over the Internet will find the same menu of instructions and receive the same assistance they would via phone.

Until now, middleware such as HP's Customer Contact Manager allowed service organizations to integrate and manage only telephony access with customer service applications and databases.

Using such middleware, customer service centers could tie together things such as automated voice response units and automatic call distributors with customer service applications and databases.

The capability lets service centers receive calls automatically and route them and complete account histories to customer service representatives. With the new version of Customer Contact Manager, HP has extended the same capability to the 'net.

Customer Contact Manager 4.0 is available now and costs between $85,000 and $3.5 million.

Frankly speaking

CONTINUED FROM PAGE 53

run everywhere Java runs.

Then there's Sun, which has finally risen from its crypt with a thirst for blood — or at least for a profit from Java.

After a year of giving Java away, Count Scott-ula has decided to put the bite on the one group of people who are still waiting for a decent Java implementation: users whose PCs aren't powerful enough to run Windows 95.

At a time when the rest of the industry is giving away Web browsers, operating systems, windowing environments and software components, Sun has decided its new Java for DOS will cost $100. Or maybe $200 or $50n — it all depends who you ask. But it's a price stiff enough to drain dry most users' interest.

If all this was just industry politics, it wouldn't matter. But the people getting stuck with the extra work — and the bill — from this monster madness are in corporate IS departments.

When Microsoft refuses to fix the bugs in its patchwork version of Java, corporate software developers either have to code around the bugs — which takes more time and effort — or write off products such as Microsoft's Internet Explorer Web browser and Visual J++ Java development environment.

When Sun jacks up the price on Java for DOS, IS shops have to choose among slow Java, no Java or busting the budget — whether that means buying Java for DOS, new Java-based network computers or new PCs to run Windows 95.

Is this stupid? You bet. Both of these vendors have forgotten that their customers have choices. Netscape is still Microsoft's worst nightmare — Netscape's Java is fast and reliable without the Microsoft version's homegrown bugs.

And Sun's greatest horror is that Microsoft's ActiveX will turn out to be more popular than Java — which it doubtless will be if Java gets too pricey.

Maybe Dr. FrankenGates and Count Scott-ula should remember one other feature of those old monster movies: the torch-waving crowd of angry villagers who storm the castle and wipe out the monsters.

That mob of peasants doesn't make for a big, shiny finale like *Star Wars* has. But it's a little more realistic than fantasies about blowing your competition to smithereens.

In the end, users — especially angry users — *will* get their way.

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

Start-up vows: One interface for many databases

CONTINUED FROM PAGE 53

know where or in what format the data resides.

Using TopTier's TCP/IP-based HyperData Transfer Protocol, users can drag and drop information between databases over the Internet, thus facilitating the searching and management of information.

One user said TopTier acts as a middleware layer for creating large-scale systems, which lets his company develop applications for its clients more quickly.

"We can create the applications once, develop once and deliver on a full range of platforms," said D. Midian Kurland, principal scientist and director of engineering at the Enterprise Education group at Computer Curriculum Corp. in Sunnyvale, Calif. Computer Curriculum is a division of publisher Simon & Schuster, Inc.

"In our case, we see it as a way to build new applications for school districts. But TopTier also allows us to accommodate the wealth of legacy data that schools have," Kurland said. "In the past, it was horrendous to give end users access to the many data types across their enterprise. [TopTier] doesn't make some of the hard work go away, but it gives us a big leg up on integrating new applications and old stuff." Although TopTier simplifies the way end users query a database over the Internet, that capability also has limits, said Rich Finkelstein, president of Performance Computing, Inc., a consulting firm in Chicago that specializes in client/server and Internet technology.

"They are bringing end users usability in the form of drag and drop," Finkelstein said. "While there is merit to using that paradigm, there are also limitations. For complex user queries, [corporate] developers may have to write back-end code; there are a lot of complex things that drag and drop cannot accommodate. The product makes simple things even easier, but users should know that there are limitations to the paradigm, and it's not appropriate for all tasks."

The TopTier products are currently being beta-tested and are due in the second quarter. Pricing hasn't been determined.

The TopTier line includes the following products:

- TopTier:Enterprise Builder, a development environment that lets application developers create a single layer that resides on top of databases. The applications created can be deployed across the Web on desktops and multiple servers.
- TopTier:Nsvigator, a client data access application that lets Macintosh and Windows users navigate multiple databases by offering one user interface for viewing and manipulating data over a network.
- TopTier:Model Transporter, a utility that lets developers convert databases into TopTier applications that can be searched.

PowerQuest's Partition Magic utility lives up to its name

By Esther Schindler

REPARTITIONING a hard disk with the DOS FDISK utility can eat up a whole day: You have to back up the drive, run FDISK, format the partitions and restore the data. PowerQuest Corp.'s Partition Magic 3.02 can do this chore in as little as 10 minutes.

Partition Magic is a cross-platform utility that helps users dynamically modify hard disk partitions. With it, cluster sizes can be minimized to save space; a system can be rearranged to add a second operating system; or a computer can simply be reorganized. Partition Magic resizes, moves or hides partitions; creates new partitions; and converts partitions from File Allocation Table (FAT) structures to OS/2 High-Performance File System (HPFS) structures on the fly.

Partition Magic 3.02 adds several features. IBM's Boot Manager is now included, which makes it easier to use multiple operating systems. The contents of one partition can be copied to another. A Windows Uninstaller Mover can be used to change drive letter assignments (for example, if one partition is divided in two) and to modify references to applications now on another partition. A new cluster analyzer tool examines FAT drives and recommends the appropriate cluster size. And FAT, 32-bit FAT, Windows NT File System (NTFS) and HPFS partitions can be created, resized and moved.

Partition Magic's analysis tool examines drives and recommends proper cluster sizes

Partition Magic lived up to the promises printed on its box. Even the manual is clear and easily understood — one of the best I've seen. The documentation assumes the user doesn't know how operating systems manage hard disks. It patiently explains basic concepts but doesn't talk down to techies. This package can be handed to a relatively inept user without fear of disaster. (Of course, always do a full backup before starting. Nothing is perfect.)

The documentation might not be needed, however, because Partition Magic's user interface is so straightforward. Right-click on a partition to get a menu of functions; drag the edge of a partition to resize it.

Starting with a new computer set up with multiple operating systems, I used Partition Magic to reorganize the system. I changed the partitions for the operating systems, and created and resized partitions for my data. I decided to add an NTFS partition to experiment with.

If I had to do all this manually using FDISK and tedious tape backup/restore iterations, it would have taken a week. The entire process took a couple of hours, and that's only because Partition Magic gave me so many options and tools that I felt compelled to experiment with all of them. If I hadn't experimented so much, I would have been completely finished in about an hour.

OPERATING SYSTEM WOES

Partition Magic runs in OS/2, DOS or in the DOS mode included with Windows 95. But it doesn't run in Windows NT, and OS/2 doesn't permit changes to partitions that are in use. But Partition Magic can modify NTFS and HPFS partitions when you start the program from DOS.

To adjust my OS/2 system partition, I had to boot from a diskette or use Partition Magic from another operating system partition.

Taken on its own, that might not be too much of a problem. But because Windows NT insisted on formatting my (OS/2 HPFS) C: partition, I had to reinstall OS/2.

For users who have worked with earlier versions of Partition Magic and use multiple operating systems, this is a no-brainer upgrade. This utility makes it breathlessly easy to install multiple operating systems.

This version isn't for everyone, though. OS/2-only users who have an earlier version of Partition Magic may wish to skip this upgrade; they won't find enough new functionality to make it worth the cost of the upgrade.

Linux and NetWare users may be disappointed to note that, while Partition Magic recognizes and can move their file systems, it can't resize them.

Schindler is co-author of Teach Yourself Rexx in 21 Days *and author of* The Computer Speech Book. *You can reach her at esther@primenet.com.*

Java environment targets business applications

By Sharon Gaudin

VISIX SOFTWARE, INC. has produced a Java development environment that goes beyond spinning coffee cups, applets and the client.

Visix, a Reston, Va.-based C and C++ development tool company, is moving its focus to the Java arena with Vibe, a Java-based application development environment with extensive class libraries, widgets and visual control tools.

Vibe is expected to open the door for Java to enter corporate application development. This area has long been ruled by C++ because of that language's maturity and ability to support applications built for three-tier client/server systems.

"They're going in the right direction," said Jeff Barr, president of Vertex Development, a user interface design and development company in Potomac, Md.

Visix is "making Java usable," Barr said. "Too many development environments just say, 'Here's the language.' Vibe gives you stuff like visual control of subclassing. That's just busy work, and it does it for you."

Vibe, which is due to be released at the end of the month, uses class libraries that Visix developed for C++ and moves them to Java, Visix officials said.

Vibe also allows developers to build applications in Java on the middleware tier. Pricing for the product isn't available yet.

Barr said the ability to build Java applications on the middleware tier is important. Vibe will give developers the flexibility to build applications using Java on the client side, the server side and on the back end, such as using an Internet server, he said. "I've built applications with [Vibe] that I wouldn't have attempted with raw Java. I needed Visix's quality display and direct access to graphics" to do the work, he said.

Mitch Kramer, an analyst at Patricia Seybold Group in Boston, said Vibe "is not a dinky little toy."

"Visix knows how to create portable cross-platform [products] so things get resized appropriately on different platforms," Kramer said. "And that has been the fundamental problem with Java. Sure, you can move that Java application to another platform, but things get rendered differently depending on whether it's on Windows or Motif or [Macintosh]."

Kramer contrasted Vibe's flexibility with Visual Cafe from Symantec Corp in Cupertino, Calif. Visual Cafe builds Java applications only at the client level.

Vibe's added capabilities make it stand out, said David Kelly, an analyst at Hurwitz Group, Inc. in Newton, Mass.

"From a business perspective, they're giving developers the choice of Java vs. C or C++," Kelly said. "Before, there wasn't any choice. It was C or C++. Visix is addressing that by combining its expertise with a rich library and development environment."

NEW PRODUCTS

TOUCH 'N GO SYSTEMS, INC. has announced Corporate Edition software to keep track of employees anywhere in the world.

According to the Anchorage, Alaska, company, the software makes it possible to touch a single computer key and instantly determine the location of every employee in a 4,000-person network.

It operates on all major PC network operating systems and any Windows workstation.

The software costs $449.95 for permits to track 200 workers in 10 departments. It can be expanded.

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www.touchngo.com

CAPSOFT DEVELOPMENT CORP. has announced HotDocs Pro, a professional developer's version of the company's document automation software.

According to the American Fork, Utah, company, the product was designed to help users involved in automation and distribution of official forms.

Users create a template by identifying information in the form or document that changes each time the document is used.

When the template is used, the product asks for answers to the variables and creates a customized form.

HotDocs Pro costs $399.

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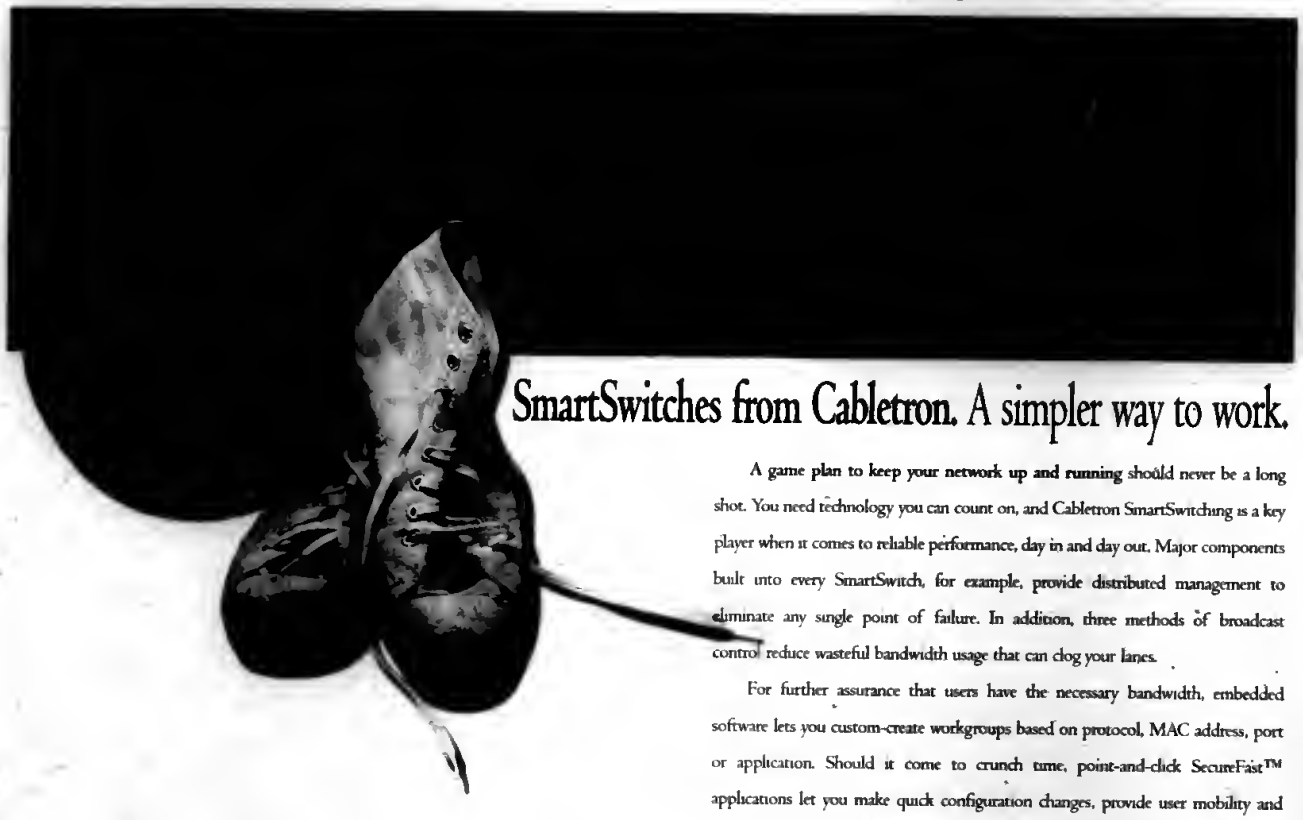

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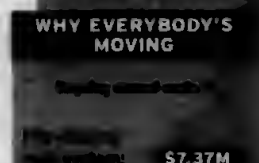


Phone hackers dial up trouble

▸ *'Phreakers' play havoc with voice mail, run up phone charges*

By Sharon Machlis

YOU MAY HAVE everything from firewalls to antivirus software and encryption protecting the data on your computer network.

But what about your telephones?

Last April, the New York Police Department (NYPD) found out the hard way that voice mail also is vulnerable to attack when hackers broke in to the police system one night and changed the message that greeted callers. The new recording said officers were too busy eating doughnuts and drinking coffee to answer the phones. It directed callers to dial 119 in an emergency.

And the NYPD, which declined to comment on the incident, isn't alone.

"It never even occurred to us that people would be trying to break in to a voice-mail system," said software developer Chris Bartram, who works for a small East Coast company. But a "phone phreaker" recently used the firm's toll-free number to get in to voice mail. The hacker, "Shadow Runner," set up mailboxes for himself and friends to use as toll-free message centers — and even advertised the service on the Internet.

Bartram's company found out about the scam last month

Phone hackers, page 63

Program supports remote access outsourcing

By Bob Wallace

BELL ATLANTIC Network Integration, Inc. (BANI) last week announced a remote access outsourcing package that provides equipment and handles ISDN service, project management and one-day equipment replacement.

The Frazer, Pa., integrator's program was designed for users who are beset by multiple networking projects and are strapped for the resources needed to roll out internal remote access systems.

"We had someone abandon our remote access program, which was then assigned to me," said Frank Meza, a senior systems analyst at Paramount Pictures, Inc. in Hollywood — BANI's beta customer. "But I already have lots of projects before me, and I don't have the resources to handle this effort."

Analysts said Meza isn't alone.

"There's definitely a trend toward outsourcing remote access, and BANI has done a solid job articulating program benefits to users," said Ellen Carney, director and principal analyst for network integration and support services at Data-

Remote access, page 63

Remote access program

- Provides: Design and construction of remote access network including equipment and ISDN service
- One-time price: $1,200 to $2,000 per seat
- Equipment fully supported: Ascend and Gandalf
- Security: Supports third-party security products
- Turn-up interval: 5 to 7 days, excluding ISDN arrangements

Source: Bell Atlantic Network Integration, Inc., Frazer, Pa.

Enhanced screen saver aims to push data, too

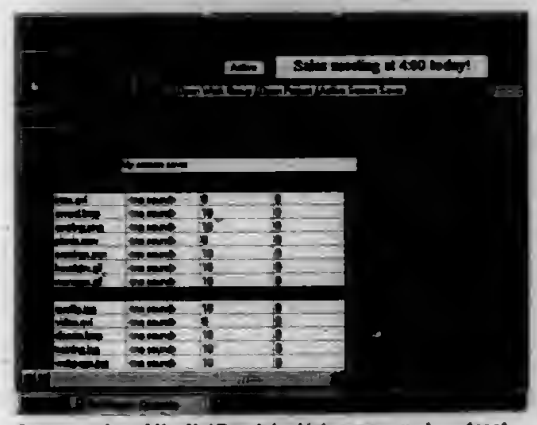
▸ *Lets IS put messages on idle terminals*

By Patrick Dryden

SOFTREACH, INC. has enhanced its LAN-based screen saver to give managers from information systems, training or human resources departments a more flexible and immediate way to nag networked users.

The Herndon, Va., vendor last year launched NetReach, which centrally controls images displayed on idle PCs throughout any network. Some organizations that had derided individual screen savers as wasteful liked the ability to distribute Hallmark-style scenes with positive messages about teamwork, for example, or reminders about safety, corporate policies or various procedures.

Screen saver, page 61



A new version of the NetReach tool lets managers broadcast bulletins across sanctioned screen-saver messages

MESSAGING SYSTEMS

Exchange migration lessons

By Barb Cole

ALTHOUGH IT is billed as easy to deploy and manage, Microsoft Corp.'s Exchange actually requires a lot of up-front planning, according to many users at large Exchange sites.

Before beginning to deploy Exchange, companies should determine how many users they can put on a server and how those servers will connect to transfer mail and replicate directory information and public folders, users said. And although the well-documented scalability issues of Exchange have focused on the 16G-byte mail storage limit, users said scalability is also tied to the way Exchange servers are hooked together.

CHAIN GANGS

"Lots of companies started chaining a bunch of [Exchange] servers together but found that it was hard to move users [among servers] and support mobile users," said Ken Rider, a senior manager of advanced messaging services at MCI Communications Corp. in Colorado Springs. MCI will eventually migrate most of its 45,000 users to Exchange.

Exchange, page 61

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EXT 25

Screen saver

CONTINUED FROM PAGE 59

NetReach allows managers to broadcast memos and other immediate information networkwide or to users in specific departments.

"Since everyone here does more than one job, I'm trying to put in a tool to help them keep current," said Gary Sewell, who manages IS and customer service at Mitsubishi Automotive Electronics Group in Plymouth, Mich.

Customized screens in the NetReach library urge 70 local users to complete survey forms needed to document business processes to earn the auto industry's Quality System 9000 certification.

But they need prompting from "the mother hen" about other responsibilities, Sewell said.

NetReach 3.0 can scroll text messages across the bottom of its static screen displays.

Sewell said he wants to broadcast a variety of information, such as meeting reminders, news about promotions and training classes and bulleted instructions "to get users to clean out their E-mail."

Tools from PointCast, Inc. in Cupertino, Calif., and other vendors can push information from Internet content providers or from corporate intranet managers to users. But Sewell said he prefers local content control at the LAN level to maintaining and managing Internet or intranet connections. And NetReach is "a universal system available right now," Sewell said.

SoftReach officials said they plan to extend NetReach from LANs to the Internet or corporate intranets so managers could distribute information to each user's World Wide Web browser. Other planned options include support for stand-alone PCs and for sending video clips.

NetReach requires one control console per site, available for $200, plus user licenses sold in increments of 10 for $80.

Exchange migration

CONTINUED FROM PAGE 59

Rider said a better design is to have the servers connect to a messaging backbone that handles message transfer, directory synchronization and data replication. In MCI's case, that backbone will be based on the Internet's Simple Mail Transport Protocol (SMTP).

"Down the road, we may even bring up a dedicated server for Usenet news."
– Lance Speelmon, Indiana University

Users said predicting the number of users per server isn't difficult, given the mail storage limits. A pilot project with several hundred users will reveal the magic number, which usually ranges from 200 to 500 users per server, they said.

Companies eyeing Exchange will also want to carefully consider the number of sites, or groupings of servers, they set up, users said. For example, Shell Oil Co. in Houston originally planned to have more than 100 sites as part of its companywide Exchange migration. Several months into the project, however, Shell trimmed the number of sites to five to make it easier to keep them synchronized.

NEW THINKING

Users also have had to rethink the traditional approach of having one giant server to handle mail, folders and gateways. "With a general-purpose server, you can't tune performance for any one group of users," said Lance Speelmon, senior messaging specialist at Indiana University in Bloomington. The university will have separate servers dedicated to handle messaging, public folders and links to SMTP mail systems for its 1,000 users. "Down the road, we may even bring up a dedicated server for Usenet news," Speelmon said.

Mike Schmidt, information systems director at Heritage Broadcasting Group in Tustin, Mich., an operator of television stations, said it is wise to put public folders on a server other than the one that handles E-mail traffic. "It allowed me to fix things [in the public folders] without bringing down E-mail services," he said.

The pace of migration has largely depended on whether the company is coming off a mainframe-based system, a LAN mail package or Microsoft Mail. Users who still have multiple messaging systems have to maintain gateways to keep messages flowing among the different systems.

Host-based messaging users are more likely to depend on shared calendars and therefore must be moved as a group, users said. Microsoft advises Microsoft Mail users to move all users in a post office at the same time.

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Phone hackers dial up trouble

CONTINUED FROM PAGE 59

when a woman called to ask about its free voice-mail service. She apparently didn't know the deal was a hack attack. "We were flabbergasted, to say the least," Bartram said. The company subsequently found that 17 mailboxes had been assigned by Shadow Runner.

TELEPHONE SECURITY

The firm was an easy target because of its new phone system from Samsung Telecommunications America in Miami. It was installed by a reseller that left it containing about 100 unused mailboxes with factory-set default passwords.

Hackers regularly swap information about such preset passwords and then look for systems where those passwords haven't been changed.

"They trade this information like I used to trade baseball cards," said Walt Manning, a former Dallas police officer who is a principal at TCS Associates, a security consulting firm in Plano, Texas.

Hacking instructions are even posted on World Wide Web sites, such as an article in the online magazine *Phrack* about how to break in to Meridian Mail systems (www.fc.net/phrack/files/p47/p47-15.html).

Several top corporate security officials said they still believe potential damage to computer networks is more worrisome than voice-mail hacking. "[Phone message security has] been an interest of ours, but it's not a high priority," said Ted Combs, manager of computer security and records management at AlliedSignal, Inc., a manufacturing and technology company in Kansas City, Mo.

Bartram said his company is out only a few hundred dollars in long-distance charges from the attack. But telecommunications security analysts warned that the consequences can be considerably worse.

Other phreakers have left profane outgoing messages or run up huge international phone bills at companies that let employees who are on the road dial a toll-free number to access the company system to place outside calls.

COSTLY INTRUSION

"We had a client who lost $4.5 million over a three-day period" when the hacker who penetrated one system broadcast the information across the Internet, Manning said.

After a telecommunications system such as Meridian Mail is installed, security consultant Ed Shuck at Visual Traffic in San Francisco advised, managers should immediately change "every password they can get their hands on. ... Don't even wait for the door to hit the guy on the butt as he's leaving. Because the hackers are going to come."

Remote access

CONTINUED FROM PAGE 59

quest in Westboro, Mass.

Paramount plans a remote access system that will eventually support 5,200 far-flung executives.

Other users who have already begun to support remote access using Integrated Services Digital Network (ISDN) expressed interest in the BANI program.

"I'd be very high on outsourcing remote access, mainly because of the high cost of the staff resources to support a program," said Barbara Maaskant, executive director of information services at the Roberto C. Goizueta Business School at Emory University in Atlanta.

Carney said BANI will face stiff competition from AT&T Solutions in Basking Ridge, N.J., and Lucent Technologies, Inc. in Murray Hills, N.J., both of which have recently announced similar programs.

For now, BANI provides full technical support only for remote access gear from Ascend Communications, Inc. in Alameda, Calif., and Gandalf Technologies, Inc. in Nepean, Ontario, and doesn't yet have a security service.

The soup-to-nuts approach of BANI's program, which includes the labor-intensive job of ordering, provisioning, installing and testing ISDN lines nationwide, is part of what attracted Paramount.

"The BANI program works well for us because they handle everything," Meza said. "I haven't had to talk to the phone company once, which is great, because I'm too busy to handle ISDN line coordination with multiple telephone companies."

But quoting the time needed to get the equipment in and an ISDN line installed and online is inexact. BANI officials said it takes five to seven days to get the service, but that doesn't include the time needed to arrange for ISDN connections.

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Mobile users eye smart phones

By Mindy Blodgett

HANDHELD communications and computing devices, including those that run Microsoft Corp.'s Windows CE operating system, have captured attention in the mobile world during the past year.

But smart telephones are starting to compete for center stage. The Wireless Services, Wireless Data Division of AT&T Corp. last week announced a business service for the AT&T PocketNet phone slightly less than a year after first introducing the smart-phone device.

The products, which were recently beta-tested, are available for corporate customers, AT&T officials said. They will be available for retail sale later this year.

Smart phones are digital/cellular telephones that enable voice and data transmissions, including voice mail, electronic mail, wireless Internet and intranet access, paging and fax capabilities.

Dataquest in San Jose, Calif., estimates that about 15,000 smart phones will be sold this year and that 2.4 million will be sold in 2000.

In addition to AT&T's offering, other smart phones are expected in the coming months, including releases from Ericsson, Inc. in Richardson, Texas — which has licensed the Geos 3.0 operating system from Geoworks in Alameda, Calif. — Mitsubishi Wireless Communications in Sunnyvale, Calif., and Nokia Mobile Phones in Sausalito, Calif.

The Palm Computing Division of U.S. Robotics Corp. in Skokie, Ill., also plans to add cellular voice communications to its personal digital assistant, the Pilot, observers said.

ALL IN ONE

Mel Ettinger, vice chairman and chief operating officer at Applied Graphics Technologies in New York, has been testing the PocketNet phone for three months. About 12 users in a pilot project at the company, which provides digital imaging and archiving services for publications and advertisers, are using the devices for immediate access to the company's E-mail system, Ettinger said.

"So far I'm really impressed," he said. "You can get messages and send messages, send faxes and check your E-mail. And to have the cellular voice capabilities means that I see this device replacing the pagers and cellular phones we currently use, because now you can do it all in one device."

Having instant access has helped sales representatives give up-to-date sales information to customers, Ettinger said.

Craig Mathias, an analyst at Farpoint Group, Inc. in Ashland, Mass., said the initial users of these devices will be in vertical markets such as sales force automation and dispatching. He added that if prices drop on the devices — the PocketNet currently sells for about $500 — usage could become widespread.

But industry observers point out that the PocketNet phone is currently available on Cellular Digital Packet Data, a wireless data communications network with limited availability. That could limit the adoption of the device, the observers said.

NEW PRODUCT

CALCOMP has announced UltraSlate, a graphics tablet for PC and Macintosh users.

According to the Anaheim, Calif., company, UltraSlate works with pen-based applications, allowing users to add handwritten notes to documents and faxes. It can be used with character-recognition software and for capturing signatures electronically for faxes and other documents. Drawing surfaces are available in two sizes: 4 by 5 in. and 6 by 9 in. A pen, pen holder and driver software are included.

The two models cost $165 and $340.

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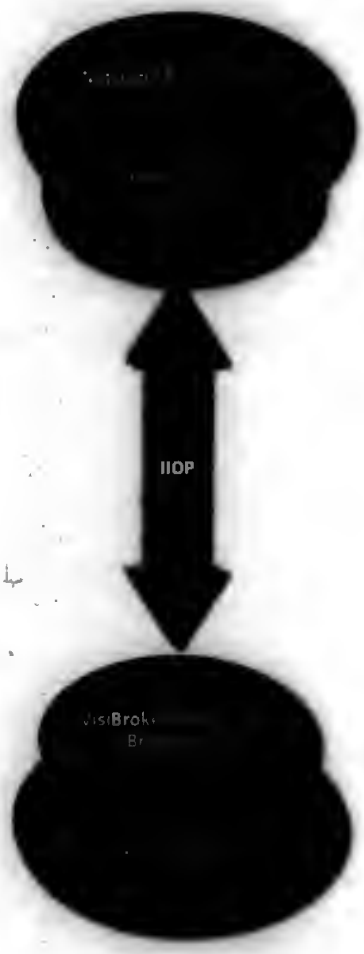

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— **Netscape Communications**
July 30, 1996

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IBM adds Java support to OS/2 Warp

By Laura DiDio

IN A BID TO stay competitive in the Internet race, IBM recently announced it will support Java Version 1.02 across its OS/2 Warp and Warp Server product line.

The support for Java 1.02 will boost performance of Java-based applications that run on the OS/2 platforms by as much as 60%, depending on the application, IBM executives said.

"This should help us stick with the OS/2 Warp platform."
– Warren Huffty, Louisiana DOT

Users and analysts said expanded Java support will let information systems managers deliver business content and applications on intranets and over the Internet to browser- and nonbrowser-based systems.

"The more businesses [that] deploy Web-based applications, the greater the requirement for platform-independent development," said Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass.

Support for Java 1.02 on the OS/2 Warp and OS/2 Warp Server platforms also means corporate users can preserve their investment in older versions of OS/2 such as Version 3.0 and OS/2 Warp Connect.

The Java support includes OS/2 Warp 4 and OS/2 Warp SMP (symmetrical multiprocessing).

Java support was previously available only on OS/2 Warp 4 clients.

Besides boosting performance and throughput, the support for Java 1.02 improves security and graphics capabilities. It provides tighter network security policies to protect TCP/IP addresses and host names, which keeps them within the enterprise firewall. The security also prevents programs and Java applets from performing unauthorized tasks such as overwriting files or spreading a virus.

By supporting Java so broadly, IBM is keeping abreast of Microsoft Corp. and Netscape Communications Corp. in the Internet and Java development race, users said.

"This should help us to stick with the OS/2 Warp 4 platform," said Warren Huffty, a PC supervisor at the Louisiana Department of Transportation in Baton Rouge.

A NEED FOR BOTH

Huffty said it is "an absolute necessity" that his users be able to deploy Java applications that will run on both Windows 95 and OS/2 Warp desktops. "If IBM hadn't provided support for the latest version of Java on OS/2, we would have found it extremely difficult to continue using it," he said.

For some users, though, IBM's Java support in OS/2 Warp is a moot point.

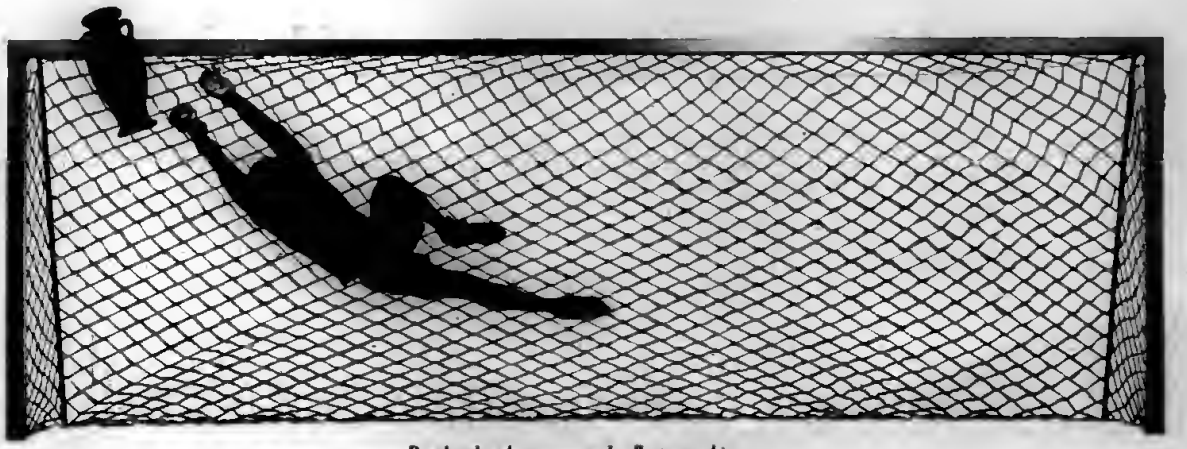
"It doesn't affect us because we're phasing out OS/2 on the desktop in favor of Windows 95 sometime this summer," said Tim Greene, a senior technical analyst at Variable Annuity Life Insurance in Houston.

Longtime OS/2 Warp user Mike Conlon, director of information resources at the University of Florida's College of Liberal Arts and Sciences in Gainesville, told a similar story. He said he is happy with OS/2 Warp from a technical standpoint and with IBM's efforts to keep pace in Java and World Wide Web development.

Nonetheless, the college will phase out OS/2 Warp in favor of Windows 95 by June.

"Having two different operating system environments is a pain in the neck," Conlon said. "Our upgrade decisions are being driven by the desire to simplify our network management by standardizing on a single desktop operating system."

Java 1.02 support for the OS/2 Warp and Warp Server platforms is available now. Customers can download it from IBM's Web home page at www.software.ibm.com.



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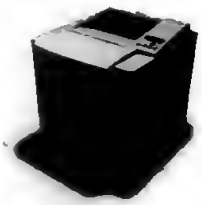
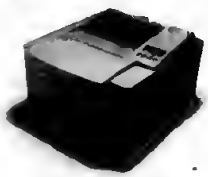
Here's the deal. As an introductory offer, Fujitsu is giving resellers a chance to buy a PrintPartner at a fraction of its original list price—$329 for the 10V and $499 for the 14AV. And to make the margins even better, for a limited time, we'll throw in free toner (a $139 value) for each printer you order.*

*Plus, Fujitsu backs each printer with an industry leading one-year warranty, so if something goes wrong, we'll replace it within two business days**.*

No Excuses™.



PrintPartner 14AV



PrintPartner 10V

And as you might expect, coming from Fujitsu—the world's second largest computer company—these new workgroup printers have all the performance your customers want. And the price? Let's just say there's really no excuse to sell anything else.

For more information about the PrintPartner 10V and PrintPartner 14AV, contact TechData at 1-800-237-8931 today.

Tech Data CORPORATION

1-800-237-8931

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1-800-626-4686 ext. 2031

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Everybody knows network computing is hot.

Industry analysts know that Tivoli Systems is red hot.

Tivoli customers know that Tivoli software can dramatically reduce the cost of managing network computing. Now that's *wicked* hot.

You know that network computing technologies such as client/server, intranets and Java are revolutionizing the world of corporate computing. Which is why Tivoli's TME 10™ management solution is, well, hotter than a chili pepper in Texas, our home state. It's the software that manages network computing.

With IBM behind us, Tivoli® had a record year in 1996 and an explosive 4th quarter. In the Americas. Europe. Everywhere. TME 10 sales in December *alone* exceeded Tivoli's total revenue for the previous year. Which makes Tivoli one of the most dramatic growth stories in the entire software industry. Ever.

Is it because Tivoli provides the best technology for managing networks, systems and applications across all major computing platforms — MVS,™ UNIX, Windows NT, NetWare, Windows and others — from data center to the desktop?

Is it because Tivoli has literally built an industry around TME 10 — allowing customers to choose compatible products from more than 350 leading vendors in our 10/Plus Association?

Or is it because the resources of IBM allow us to deliver our unique management solution worldwide, with unparalleled service and support?

Answer: It's all of the above — and more!

In 1997, as more and more companies around the globe embrace TME 10, look for Tivoli to get hotter — and knock the competition cold. To find out why Tivoli is hotter than a billy goat in a pepper patch, visit our Website at www.tivoli.com.

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Briefs

INTERACTING

Ford pushes 'net data

▸ *World Wide Web technology updates databases, not browsers*

By Mitch Wagner

TO AN OBSERVER, Ford Motor Co.'s strategy might very well seem like a buying a new car and never driving it — just sitting inside to enjoy the air-conditioning.

The question is: Why would Ford license something as advanced as push technology for something as mundane as database updates?

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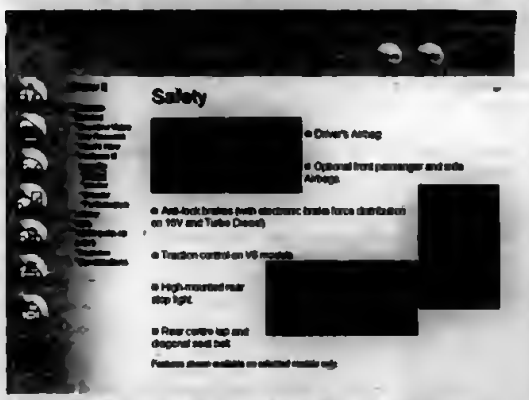

Safety
Driver's Airbag
Optional front passenger and side Airbags
Anti-lock brakes (with electronic brake force distribution on 16V and Turbo Diesel)
Traction control on V8 models
High-mounted rear stop light
Rear outboard lap and shoulder seat belt
Features shown available on selected models only

Ford's FocalPt system uses push technology to give salespeople rapid access to vehicle features and availability

Rather than waiting for a client to request information, as is normal on the World Wide Web, servers that use push technology send it to users automatically, often in the form of a screen saver. The most well-known example is the news network run by PointCast, Inc. in Cupertino, Calif., which spews headlines and ads over the Internet to millions of users worldwide.

Ford's network, called FocalPt, was designed to improve customer retention by providing support for Ford customers for a car's lifetime [CW, Feb. 17]. The system will offer promotional, inventory and financing information to help salespeople close a deal. While talking to a customer, the salesperson will be able to locate the make, model and configuration of the customer's choice anywhere in the

Ford, page 73

Just building an intranet isn't enough to lure users

By Justin Hibbard

INFORMATION SYSTEMS managers may think the media has already sold end users on the fun of surfing a corporate intranet. But like any new technology, an intranet can go unused unless someone leads users into the surf.

Heather Copeland-LaBruno, Internet development coordinator at Pacific Enterprises in Los Angeles, said some upper managers at her company are reluctant to share information and have resisted using an intranet-based discussion application.

"We've been trying to convince people that knowledge is power if you share it, and if you hold things close to your chest, it doesn't help you or the company," Copeland-LaBruno said.

JC Penney's one-day intranet fair helped build interest

By contrast, users at the bottom and middle of the corporate hierarchy have been open to the new technology, she said.

"The people at the lower levels are hungry for information," she said. "And they're willing to give [information] up to get something in return."

Like many intranet builders, Copeland-LaBruno has found that the biggest challenge of deploying an intranet is promoting its use. She and other intranet veterans said that IS managers must be prepared to double as teachers, team builders and impresarios if they expect end users to make an intranet pay off.

But the payoff can be big, according to International Data Corp. (IDC) in Framingham, Mass. The firm last year studied Netscape Communications Corp.'s corporate customers and found most of them garnered a return on investment of more than 1,000% from their intranets. Most of the return came in the form of increased user productivity. Driving the high returns, IDC found, was a set of best practices that included promoting the intranet to employees and offering pro-

Intranets, page 73

SECURITY

System brings surveillance into real time

By Charles Babcock

SAN DIEGO-BASED Touch Technologies, Inc. has shipped a turnkey security system with a new twist — constant real-time surveillance of the network.

Unlike firewalls, which take one look at data and then pass it along, Touch's Network Security Agent employs a common sniffer approach to detecting what passes over the network. Then, using rules that it has been configured to follow, it analyzes what particular packets are doing.

The system can track all file transfer protocol activities, including downloads from the Internet. It can identify an attempt to guess passwords or spoof a legitimate file server's identification and address and automatically disconnect the session. It can also reconstruct a user's session as it happens, keystroke for keystroke, so network administrators can zero in on suspicious activity, early users of the system said.

"I've had it for three months, and I'd fight anyone who tried to take it away. It opened my eyes to a lot that was happening," said beta tester Brad Barrett, vice president of operations at TheNet Digital Services, Inc., an Internet service provider in Miami.

Other security systems can capture similar information, but it is usually saved to a file where it is reconstructed for examination after the event. Network Security Agent, which is limited to TCP/IP and Digital Equipment Corp. Local Area Transport networks, is an attempt to show what is going when the alert is sounded.

Security, page 73

The Internet

The World Wide Web • Intranets • Online Services

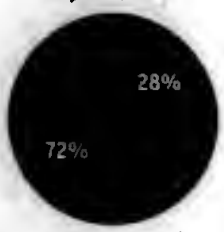
Briefs

Web phone services

MCI Communications Corp. has launched a program to allow its customers to control their telephone service over the World Wide Web. The MCI One Web page allows users to set up and change their call forwarding, view and update current services, get credit cards, change billing addresses and get information and technical support via electronic mail.

INTERACTING

Interactive content of corporate Web sites



- Support interactive features
- Don't support interactive features

Base: 284 Fortune 500 public Web sites surveyed in 1996

Source: International Data Corp., Framingham, Mass.

Surf for mental help

Add therapy to the long list of uses for the Web. A new Web site called Wired Senses connects anyone suffering from depression, struggling with a relationship or facing other problems to mental health coun- selors. It is available any time, day or night at www.revisions.com/wiredsenses.html. Live sessions via a White Pine Software, Inc. CU-SeeMe link cost $35, and E-mail counseling costs $20. The service isn't accredited, however.

New news server

MetaInfo, Inc. in Seattle is shipping NewsChannel, a news and collaboration server for Windows NT based on the Internet's Network News Transfer Protocol. It is aimed at companies that wish to incorporate information from Internet newsgroups on intranets. It costs $795 per server.

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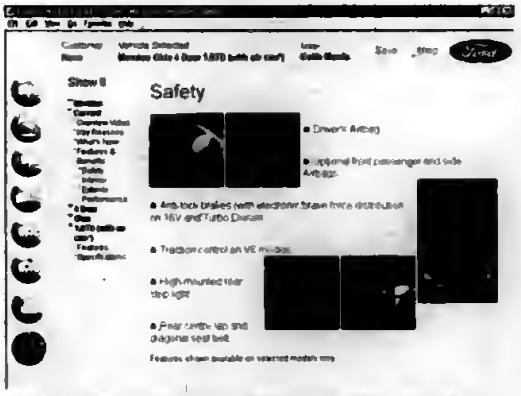

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Security, page 73

Some sites soar, while others will fuel reservations about E-commerce

By Frank Hayes

USERS CONNECT TO an airline's World Wide Web site for one primary reason: to buy a ticket. That's also the main criterion *Computerworld* used in reviewing airline Web sites for their usability.

The results were revealing: Some big airlines inflicted the miseries of their aging, mainframe-based reservation systems on Web customers. The best ones used the Web's user-friendly interface so nothing got in the way of doing business with the airline. Which is what Web sites should be all about.

United's Web site lets you check flight schedules, but you can't buy a ticket, make a reservation or check a fare

UNITED

GRADE: C-

United Airlines' Web site was a huge disappointment. We couldn't buy a ticket, make a reservation, check a fare or even join the frequent-flier club. We could check flight schedules, but beyond that, this site was little more than an electronic brochure.

The site also was jumbled. The most valuable information — schedules and availability — was all but buried. The graphics were pretty but confusing. We had to click on an introductory page before getting to the real home page.

The site also contained too much jargon, such as "CTO," which most customers won't understand to mean "city ticket office."

AMERICAN

GRADE: B

American Airlines' Web site was well-organized and useful — right up until we tried to make a reservation.

The site looked and worked like a window into American's Sabre reservation system: We could check schedules, fares and flight status.

It used some jargon and offered much more aircraft data than was needed, but it did let us find out which gate a flight will arrive at.

But once we found a flight, we couldn't make reservations or purchase tickets unless we were members of American's frequent-flier club.

Worse still, we couldn't even join the club online — that required a phone call. American stopped us dead, halfway through the process.

DELTA

GRADE: B+

It was a bit muddled, but on Delta Air Lines' Web site we could actually accomplish most of what we wanted to do: check flights and fares, buy tickets, even check frequent-flier mileage.

There were some restrictions: We had to buy the ticket when we made a reservation and couldn't buy a ticket without a frequent-flier club membership.

But we could join the club online, so that was merely an annoyance, not a show-stopper.

The site could use some careful editing. Although the "travel planner" section let us buy tickets, the "flight schedules" section said to call Delta for ticketing.

And the links for help and frequently asked questions didn't work during our testing.

USAIR

GRADE: C

USAir had the Web site of the future — literally. We could check flight schedules, but almost all the features travelers would really like, including reservations and ticketing, were still in the planning stages.

USAir at least has an excuse: The airline is about to change its name to U.S. Airways, complete with a new look.

The site will get a makeover within the next few months.

Other airlines with less-than-high-flying sites included:

- Continental (www.flycontinental.com), which required credit-card information to begin the reservation process.
- TWA (www.twa.com) oddly, asked for a password but let us in without one; it didn't offer reservations or ticketing.
- Northwest (www.nwa.com), which had no fare information or reservations.
- Valujet (www.valujet.com), which was just an online brochure.

Ironically, some of the best-designed airline Web sites were at smaller regional airlines.

SOUTHWEST

GRADE: B

Southwest Airlines' site was a joy to use — when it worked. The process of picking destinations, choosing fares and buying tickets was clean, colorful and straightforward, without side trips or dead ends to slow us down. The downside: Southwest's reservation system came back with "not available now" far too often during regular business hours.

Southwest's Web site is a joy to use, but some of its features don't work all the time

ALASKA

GRADE: A-

Alaska Airlines' site wasn't quite so tightly designed, but it was still pleasant to use. Flight schedules, fares and online ticketing were available. We could even make a reservation without buying the ticket immediately.

Rough spots included trouble catching errors such as trying to fly on a date that had already past.

	United Airlines	American Airlines	Delta Air Lines	USAir	Southwest Airlines	Alaska Airlines
URL	www.ual.com	www.aa.com	www.delta-air.com	www.usair.com	www.iflyswa.com	www.alaskair.com
FLIGHT SCHEDULES	Yes	Yes	Yes	Yes	Yes	Yes
FARES	No	Yes	Yes	No	No	No
FLIGHT AVAILABILITY	Yes	Yes*	No	No	Yes	Yes
FLIGHT STATUS	No	Yes	Yes	No	No	No
RESERVATIONS	No	Yes*	Yes**	No	Yes**	Yes
PURCHASE TICKETS	No	Yes*	Yes*	No	Yes	Yes
JOIN FREQUENT-FLIER CLUB	No	No	Yes	No	No	No
CHECK FREQUENT-FLIER STATUS	No	Yes	Yes	No	No	No
CAR RENTAL LINKS	Yes	No	Yes	No	No	Yes
	C-	B	B+	C	B	A-

* Requires frequent-flier membership
** Requires ticketing

Ford pushes info to dealers

CONTINUED FROM PAGE 71

world and let the customer know when to expect delivery.

FocalPt will also automate dealer service centers, so when a customer brings in a car for work, distributors have repair information specific to that car. Ford owners who break down anywhere in the U.S. will find that the nearest Ford dealership has all the information on their car stored locally.

Ford selected a push technology offering from Wayfarer Communications, Inc. in Mountain View, Calif., as middleware to send database updates from Ford headquarters to Microsoft Corp. SQL Server databases in dealerships worldwide. The data is distributed via the company's existing FordStar satellite network.

Ford picked Wayfarer for its performance and the wide variety of application programming interfaces it offers to connect to legacy data stores, Peterson said.

The data that Wayfarer distributes will be available to FocalPt users with Microsoft's Internet Explorer browser. Some other push systems, such as PointCast, require proprietary clients on the desktop, which makes the experience unfamiliar to users accustomed to surfing the Web with standard browsers.

Dealers will welcome FocalPt, said John Anderson, computer director at car dealer Framingham Ford in Framingham, Mass. "It takes the power of the PC and provides new methodologies for interacting with the customer," Anderson said.

"This enables different people to see the data they need to see in a timely fashion, without a lot of network overhead," said Ted Julian, an analyst at International Data Corp. in Framingham.

Security

CONTINUED FROM PAGE 71

With 2,000 customers accessing TheNet's 20 servers, Barrett said he is "watching for suspicious activity on our servers, such as attempts at password file breaking."

A system break-in at the University of California, Santa Cruz in late 1995 prompted that school to install Network Security Agent. Network administrator Mark Booloostian said the intruder had installed software sniffers that could capture the passwords of legitimate users, but the surveillance product helped track down each sniffer and eliminate it.

"We actually managed to find several people who were trying to get into accounts where they had no business," he said. The university couldn't find the money to purchase the product, so it doesn't currently use it, Booloostian said.

Network Security Agent is a pricey combination of software and a Digital 233-MHz Alpha workstation. It is sold ready to plug in and use.

The entry-level system costs $15,000 and can provide surveillance over 150 users. A 500-MHz workstation for 5,000 users costs $100,000.

Touch officials said the product requires the power of the Alpha systems because analyzing 200 million to 300 million packets per day "burns up" CPU capacity.

"I found the box to be quite useful to hunt down problems when you know they are occurring," Booloostian said.

"You can put a trap on the word 'password' and look at any traffic that mentions password," said Mir Roghani, senior LAN/WAN administrator at Raytheon Service and Support Co. in Annapolis Junction, Md.

Intranets need user interest

CONTINUED FROM PAGE 71

grams to encourage intranet use.

JC Penney Co.'s best promotional practice was a one-day intranet fair that showcased JWeb, the company's intranet, and taught employees how to use and create intranet applications, according to Mellanie Hills, former leader of the Dallas-based retailer's Internet/intranet team.

"It really did cause the spread of the intranet," said Hills, now president of Knowledgies, a consultancy in Plano, Texas.

The fair boosted traffic and content on JWeb, Hills said. But those boosts alone won't make an intranet pay off, she added. Companies have to change some of their business practices to promote collaboration among employees, she said.

"The first step is to find folks who are willing to work together and help them start working together before you start throwing the tools at them," she said. "Reward systems [at companies] teach competition, not teamwork. But intranets are starting to break down some of those old paradigms."

A more aggressive way to encourage intranet use is to give employees no alternatives. For example, by the end of this year, much of Pacific Enterprises' data will be available only through the intranet, Copeland-LaBruno said.

A similar intranet-only system is nearing completion at B. C. Hydro in Vancouver, British Columbia, which is migrating from IBM's mainframe-based Professional Office System groupware to an intranet and Microsoft Corp.'s Exchange messaging system. Already, much of the company's data is accessible only through a browser, according to Steve Whan, corporate webmaster at the company. But B. C. Hydro has taken steps to ensure that users know how to be productive on the system.

"Every user gets a half-day course," Whan said. "We've seen our usage probably double in the last month with the [newly trained] users coming on board."

NEW PRODUCTS

QSOUND LABS, INC. has announced UltraQ, a peripheral for converting a stereo or mono output signal from a PC's sound card and processing it into three-dimensional sound.

According to the Calgary, Alberta, company, UltraQ connects between a sound card and speakers to deliver 3-D sound. UltraQ includes a volume control and a signal light that lets users know whether the input signal is stereo or mono.

UltraQ costs $99.95.

QSound Labs
(403) 291-2492
www.qsound.com

SILKNET SOFTWARE, INC. has announced ServiceDesk, a customer interaction software system for the World Wide Web.

According to the Manchester, N.H., company, the product allows customers to post problems on a Web site and have them routed or request online assistance. It runs on Windows NT servers.

Pricing starts at $50,000.

Silknet Software
(603) 625-0070
www.silknet.com

PILOT SOFTWARE, INC. has announced Pilot Internet Publisher, the Internet and intranet component of the Pilot Decision Support Suite.

According to the Cambridge, Mass., company, the support software allows for online analytical processing capabilities through standard Internet architectures. The software can use Java and ActiveX technologies.

Pilot Internet Publisher costs $10,000 per server.

Pilot Software
(617) 374-9400
www.pilotsw.com

INLET, INC. has announced CurrentIssue, a World Wide Web site design and management software package.

According to the Cedar Rapids, Iowa, company, the product includes a design client, server processing, site management and prebuilt components to let developers create and manage sites without buying multiple software applications.

It costs $995.

Inlet
(319) 369-0096
www.inlet.com

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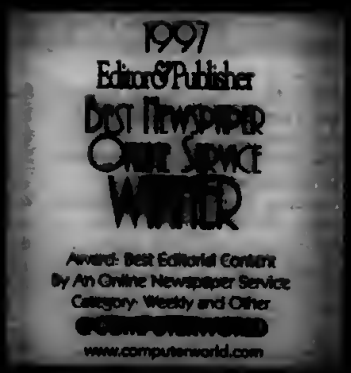

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Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Outsourcing megacontracts (valued at $1B or more)

1993	$8.8B
1994	$10.9B
1995	$14.7B
1996	$32B
1997	$40B*

*Projected

Techno-phobic MDs refuse to say 'Ah!'

▸ *ER doctors wary of computerized records*

By Thomas Hoffman

ONE HOSPITAL FOUND the toughest part of introducing a new record-keeping system that could raise physician salaries was getting the emergency-room doctors to use it.

HealthSouth Medical Center's emergency department, which last June began using a pen-based computerized patient record system from Datamedic Corp. in Hauppauge, N.Y., has been able to significantly improve its patient-record reporting.

More accurate record-keeping could boost doctors' incomes by 10% to 20%.

That means higher salaries for HealthSouth emergency room doctors, whose salaries depend on the number of patients they see and the level of care their patients receive, said Dr. Bob Slay, chief of the emergency department at HealthSouth in Richmond, Va. The more accurately they can document what they have done, the more they get paid.

Yet Slay has had trouble getting his staff to use the system. HealthSouth's five emergency-room physicians handle 20,000 combined patient visits each year. Like most emergency-room doctors with overwhelming caseloads, many of the HealthSouth doctors say it is faster and easier for them to

Doctors, page 76

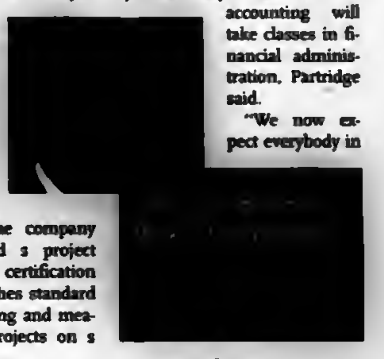
SKILLS TRAINING

Cross-training pleases Georgia-Pacific IS staff

By Julia King
ATLANTA

INFORMATION SYSTEMS professionals at paper manufacturer Georgia-Pacific Corp. aren't fluent in just hardware and software.

Through an ongoing $5.8 million training program, they also are conversant in consulting, conflict resolution and the business aspects of the departments they serve. The training program is at the heart of a major, three-year-long IS overhaul at the company.



Georgia-Pacific this month also opened an on-site IS performance support center for continued computer-based skills training. The company also has launched a project management certification course, which teaches standard methods for running and measuring large IS projects on a day-to-day basis.

It is all part of a "major people rebuild," said Rick Partridge, group manager of IS human resources at Georgia-Pacific. "Three years ago, we looked around and saw we had very robust technology skills but that there were major gaps in business and softer skills."

To plug those gaps, Georgia-Pacific assessed the skills of each of its 800 IS staffers against a newly developed job competency model. The company then developed what has become a 70-course curriculum that covers technical and business skills, including effective communications, presentation skills and time management.

BUSINESS-SPECIFIC

IS staff members also are trained in their customers' business areas. For example, a new systems analyst who works in accounting will take classes in financial administration, Partridge said.

"We now expect everybody in IS to understand their customers' business. This has made a tremendous improvement in moving from an 'us vs. them' atmosphere to a partnership with customers," Partridge said.

Partridge said Georgia-Pacific also uses its training program as a sales point to recruit qualified IS professionals. "The flip side,

Georgia-Pacific, page 76

Sensormatic upgrades to Baan client/server package

By Randy Weston

SENSORMATIC ELECTRONICS Corp. may have provided 21st century security technology at last summer's Centennial Olympic Games in Atlanta, but its own information systems were older than some of the athletes and lagged behind the company's needs.

The company's system was designed for a $100 million company with one manufacturing plant, said Dennis Torrell, vice president of MIS at Sensormatic.

Firm's growth led to mismatched systems that "had a little bit of everything"

GROWING PAINS

Since then, the Boca Raton, Fla.-based company has grown into a $1 billion multinational corporation with offices as far away as Mansourieh Al Matn, Lebanon, and Port Louis, Mauritius.

Now Sensormatic, a maker of security devices including retail electronic security tags and closed-circuit televisions, is standardizing its business on a single packaged client/server application — The Baan Co.'s Baan IV software.

"Because of the high-growth industry we are in, we ended up with a lot of mismatched systems, systems that didn't talk to

Sensormatic, page 76

Critics say Fannie Mae Web site will hurt mortgage lenders

By Thomas Hoffman

A NEW WEB SITE posted by Fannie Mae is supposed to make it less intimidating for first-time home buyers to shop for a mortgage. The site provides hot links to lenders who offer online mortgage applications.

HomePath.com may be good news for low- to middle-income buyers and first-time buyers. But critics believe the system may have an unhealthy ripple effect on banks and other lenders.

COMPARISON SHOPPING

The site (www.homepath.com) provides hyperlinks to the World Wide Web sites of 23 Federal National Mortgage Association (Fannie Mae) lenders, including Bank of America and Countrywide Home Loans, Inc. Consumers can use these hot links to comparison shop for mortgage rates and, in some instances, lock in to a mortgage rate online with a lender.

By using the site and its hot links, consumers reportedly can expect to significantly reduce the amount of time required for preapproval.

Critics fear that the service will commoditize mortgage services among banks and weaken customers' loyalty to their banks.

"The downside for banks is that it lessens their control over customers," said George Kivel, a technology analyst at The Tower Group, a Newton, Mass.-based financial services and technology consultancy.

Another concern is that allowing home buyers to comparison shop for mortgages online could trigger an interest-rate war among competing banks, said Art Gillis, president of Computer Based Solutions, Inc., a Dallas-based banking consultancy.

"The worst thing for a banker to do is get into a battle over interest rates," Gillis said. What banks prefer to do is to sell their services, "not haggle over a quarter point here or there," he said.

"The worst thing for a banker to do is get into a battle over interest rates." – Art Gillis, Computer Based Solutions, Inc.

HomePath.com could go a long way toward creating brand recognition for lesser-known Fannie Mae lenders such as Monument Mortgage, Inc. in Walnut Creek, Calif., (www.monument.com) that are hyperlinked to the site.

HomePath.com "should significantly help us branch out into other geographic areas," said Lee Decker, senior vice president of secondary marketing at Monument.

QUICK RESPONSE

Today, a consumer can dial in to Monument's Web site, apply for a mortgage online and get preapproval within six hours, Decker said. Partly because of the hot links between Fannie Mae and Monument, the time required for preapproval should be slashed to one hour, he said. Monument has invested roughly $100,000 to port Fannie Mae's interface to its site.

ONLINE CALCULATORS

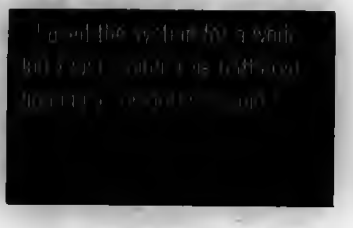
HomePath.com, which went live last month, includes online calculators that Web surfers can use to figure out what size mortgage they can afford to buy. HomePath.com, which is best viewed using Netscape Communications Corp. Navigator 3.0 or Microsoft Corp.'s Explorer, next quarter will add a state directory of free home buyer education services for consumers, said Lisa Haas, Fannie Mae's webmaster in Washington.

Doctors wary about system

CONTINUED FROM PAGE 75

scribble nearly illegible handwritten notes on patient charts than to use a pen-activated tablet.

"I used the system for a while, but I just couldn't be bothered lugging a computer around anymore," said Jill Browne, a HealthSouth emergency medicine specialist who began using Datamedic's EMstation system last fall. "We're so pressed for time [in the emergency room] that it's faster to make notes on patients' charts," she said.



Browne isn't alone. Persuading doctors to use computers, industry practitioners said, is about as popular as getting patients excited about receiving a barium enema.

"Doctors are incredibly stubborn when it comes to using computer technology," said Phil Jackson, an independent consultant who works with Partners HealthCare System, Inc., a Boston-based alliance of Brigham & Women's Hospital, Massachusetts General Hospital and other Boston-area medical facilities.

Voice-recognition software vendors such as Kurzweil Applied Intelligence, Inc. in Waltham, Mass., have developed medical language-based systems that free doctors' hands from keyboards or notebooks during patient examinations, said Art Schoeller, an analyst at Gartner Group, Inc. in Stamford, Conn. But most doctors "talk really fast," and few doctors have the patience to use systems that require slow, steady enunciation, Schoeller said.

Slay said the financial incentives are helping him to slowly draw his staff into using the system.

For certain cases, HealthSouth physicians receive 40% less in patient reimbursements with handwritten notes because of less-complete information than they would if they used EMstation, Slay said.

"That can make a big difference to a doctor's bottom-line pay, so those incentives are helping us wean them into using the system," Slay said.

Sensormatic upgrades to Baan client/server package

CONTINUED FROM PAGE 75

each other," Torrell said.

Sensormatic "had a little bit of everything," with legacy hardware from Hewlett-Packard Co. and Digital Equipment Corp, he said.

GOOD REFERENCES

Because several European offices were already using Baan's application package, the software selection team put it at the top of its list. Baan was chosen last summer, installation began in September and the first site went live last month.

About 20 people from Torrell's staff work full time on the project. Hundreds more, from end users to local IS staff, are pulled in for each site's installation to help configure individual modules. The conversion has included migrating from older HP 3000 minicomputers to HP 9000 servers that run the Unix operating system. Sensormatic also installed its first database management system from Oracle Corp.

Last month, Sensormatic went live with Baan business process guidelines for its 73 sites around the world.

In addition, seven offices are already using Baan modules, Torrell said. About 500 Sensormatic end users are using Baan's products. Almost 1,500 will be on the system when the project is completed.

Torrell wouldn't release the total cost of the implementation, but he said so far it is on time and within budget.

Bruce Richardson, an analyst at Advanced Manufacturing Research, Inc. in Boston, said a typical global installation of this size would cost between $8 million and $10 million.

USER-FRIENDLY PACKAGE

Suzie Chowaniec, manager of Sensormatic's international order-entry group, said the Windows-based Baan client is very user friendly and flexible compared with the company's old menu-driven terminals. But the packaged Baan applications are hard to customize, she said.

"Customization creates a ripple effect," Chowaniec said. "If you try to modify some fields, you hit so many other areas because [all] the functions are intertwined. You want a package, but you suffer for it."

Richardson agreed. "It's the bane of a completely integrated system," he said.

Georgia-Pacific cross-trains

CONTINUED FROM PAGE 75

though, is that we give them skills that make them very marketable," he said. Georgia-Pacific's IS turnover rate was 18% last year, he said.

Still, the enhanced business and soft-skills training works to better align IS with Georgia-Pacific's business, Partridge said. The proof is mainly in the higher scores the IS staff has received on customer satisfaction surveys, he said.

Between 1993 and 1996, Georgia-Pacific also installed a corporate wide-area network and outsourced its data center operation to Integrated Systems Solutions Corp.

"Business skills are the key to everything," said Dave Deckebach, a former IS director who worked in a variety of operations assignments before he became assistant manager at a Georgia-Pacific chemical plant in Peachtree City, Ga.

As an IS director, "most of my interest was in trying to get close to the business and get inside the heads of leaders of the business. That all helped me to sell IS projects that made the most sense," Deckebach said.

Other companies gradually are catching on to the value of systematically cross-training IS staffers in technical and business skills, said Ellen Julian, a research manager of training and education programs at International Data Corp., based in Framingham, Mass.

"We're seeing a more unified delivery of IS and soft skills. That's filtering down to not just the senior IS staff, but to the people who report to them. They need to present information and [need to] be able to justify spending time on what they're doing," Julian said.

Managing

What's in a name?
Yesterday's data processing manager and today's CIO need a new title, Jim Champy argues. Page 80

Glenn Hensen turned down a job offer that would have increased his pay 25%. His reason? His employer offers him training opportunities that boost his credentials.

Treat 'em right

Are you losing good people? It probably isn't over money. A Computerworld *survey finds that faith in the boss and the company often means more than a 20% raise.*

CONTINUED FROM PAGE 1

agers who need to keep their best employees but can't match the lofty pay raises and bonus packages being offered by their competitors. Assuming IS professionals are being paid a reasonable wage, what really keeps them on the job is a good work environment and the long-term ability to learn new skills.

To find out what it really takes to keep skilled people, *Computerworld* interviewed 200 IS professionals who had seriously considered job offers last year and in the second half of 1995. All but 36 refused the offers. We asked them why and found the following:

- Pay is *not* the most important reason IS employees leave or stay at their jobs. Seventy-five percent say money is important or very important, but other factors such as training and the ability to use new technologies were rated just as high or higher.
- In making job decisions, 81% cited the technical direction of the information technology organization, and 79% stressed the ability to use and learn new technologies.
- Seventy-nine percent cited the quality of their boss, and 77% mentioned the quality of their peers in IS.
- Bonus plans were rated important or very important

Treat 'em right, page 78

RIGHT Treat 'em

CONTINUED FROM PAGE 77

by only 42% of all respondents; special financial incentives received high marks from only 32%.

Don't misread the findings: Money is important, and IS professionals have a keen sense of what they're worth.

"I could leave right now for a 20%-plus [pay] bump," Hansen says. But he says he likes the training he's getting and the fact that Seta goes to unusual lengths to "mediate the rough spots" between consultants such as him and clients. "I would rather have a slightly lower pay level and be treated fairly and intelligently than make big bucks and be abused," he says.

Tell off your old boss

Do you want to tell off your former boss? Send us a "Dear John" letter detailing what you would say.

We'll print some, but we'll keep your name and your ex-boss' name secret. Send letters to **robert_scheier@cw.com.**

Be sure to include your name, address and telephone number. We won't print that information.

The quality of their bosses was a top-ranking issue for almost eight out of 10 of those surveyed. That means being fair, flexible and knowledgeable.

If a manager doesn't understand the technical requirements of a project, "he can't be of assistance to his staff," says a LAN administrator at a financial services company in the Southwest, who asked not to be identified. "I don't expect them to be in there coding along with the programmers but to be able to help define the parameters and understand the scope of the project." All too often, the LAN administrator says, IS managers fail the test: "Too many of them have reached their level of incompetence."

Ideal IS managers should introduce their staffs to unfamiliar technologies and "actually encourage them to fail, because that means they're trying," the LAN administrator says. The ideal boss sets aggressive but realistic goals and explains them clearly. "Success and failure in a project need to be well-defined and communicated, so someone can tell today how they're meeting the criteria. If it's ambiguous, if it's poorly defined, if it's not communicated, then people are subject to start floundering."

Being treated well can be as "silly and simple" as a gift certificate for dinner for whoever can write the most defect-free code, says Keith McMaugh, a systems manager at Day-Lor Creations, Inc., a maker of fashion belts in Providence, R.I. "Sometimes, you just feel like you're being taken for granted, that you're just another body to be thrown into the machine and torn up and spit up," he says.

He turned down a job that offered a 15% pay increase in part because of the recognition and autonomy he gets in Day-Lor's three-person IS department. "If I were one of hundreds [I] might find it hard to gain the kind of recognition that I was used to," he says.

The employer's financial stability was ranked important or very important by three-quarters of the respondents. That isn't surprising, considering that 84% of them are the primary breadwinners in their families. Chris Walker, previously an independent consultant, accepted an offer to become LAN manager at Vanderwile Engineers, Inc., an industrial engineering firm in Maitland, Fla.

"It seemed a little more stable" than working on his own, Walker says. "Companies have money, contacts; they have buying power." Plus, he says, he was looking to buy a house and "a bank looks at having a position with a company as a lot better than having a private consulting business."

Tight labor market or not, IS employees also tend to stick with bosses who have stuck by them in times of family difficulties. James Houk, a senior systems analyst at Cytec Industries, Inc. in Milton, Fla., says he didn't really agonize before rejecting a job offer. One reason, he says, is the flexibility his boss showed during a recent series of family crises.

"When my mother and grandmother passed away, he [was] very supportive and allowed me to take care of what business I needed to take care of," Houk remembers. It's important, he says, that he can tell his manager, "'I've got a problem with my child; I need to take care [of it]' without having a big repercussion."

Survey respondents said keeping themselves marketable by working with current technology was either a powerful inducement to stay in a job or a powerful temptation to switch. Even though Walker is glad he took his new job, "in some ways I feel like I've fallen behind" in learning new technologies. "A lot of seminars and trade shows come by, and often I'm not given the opportunity and the time to go see them. I think it's important . . . to be given that opportunity."

At Fallon Health Care System in West Boylston, Mass., Dwight Muller, director of MIS, is trying to address the training and recognition issues after going through a recent spate of defections.

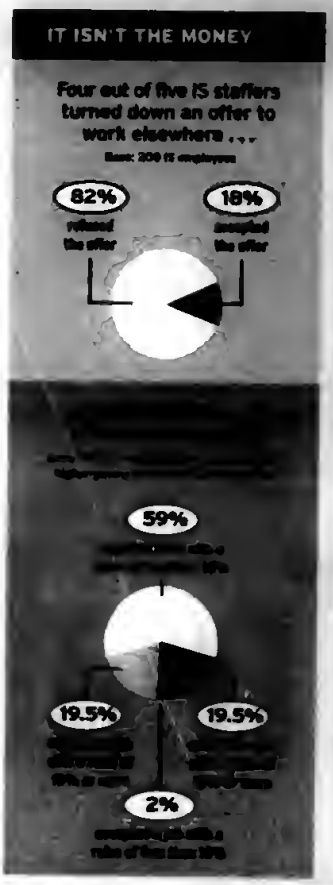
Muller established a "Best of IS" program to recognize one employee each month with a small cash award and a small ceremony. At "lunch and learn" sessions every few weeks, IS staff members can learn about new technologies such as data warehousing. "They're well-attended; it tends to keep people's enthusiasm up a little bit," he says.

Muller also believes in being specific about the technology opportunities he will offer people. A manager should say, "'Here is your assignment, here is what you can expect to do in the middle of next year, and by the way, you're going to sit through this training session two months beforehand.'" he says. What's important is the "specific linking of the specific opportunity to the individual," Muller adds, instead of the broad-brush "'Here's where we're going over the next three years.'"

Of course, many IS managers worry — with good reason — about employees leaving for higher-paying jobs as soon as they're trained and marketable in the latest hot technology.

But Hansen is unsympathetic to employers. "That's the risk, and you can't avoid it," he says. "There's no such thing as loyalty anymore." But "training, treating people right, respecting opinions . . . these are important factors in staying. We all want to feel good about ourselves and that we're relevant."

Scheier is Computerworld*'s senior editor, management.*



IT'S THE TECHNOLOGY EADERSHIP
Base salary is a bigger issue with younger employees
Importance of base salary in deciding to accept or reject most recent job offer:
Under 30 years old 4.14
30-39 years old 3.98
40-49 years old 3.50
50 years and older 3.50
Base: 200 IS employees

ABOUT THE SURVEY

Computerworld surveyed 200 IS staff members in December, asking them whether they had received an outside job offer last year or in the second half of 1995. Of the 200 surveyed:

- **93%** said they made the right choice
- **89%** were men
- **84%** were the primary wage earners in their families
- **62%** had children

RESOURCES: WEB SITES FOR

By Leslie Goff

Did you make any New Year's resolutions to become better informed via the Web? If you haven't lived up to them yet, here are some sites worth a look.

RESOLUTION: *Get news and information I need regularly in a more timely, efficient manner.*

CEO Express
www.ceoexpress.com/

THIS IS A TIGHTLY FOCUSED and implemented listing of business resources that smartly consolidates choice links relevant to busy information systems executives.

The links are clearly categorized and listed on the home page, so the site is efficient to use.

You can immediately access the most relevant media, including daily newspapers, business magazines, news feeds and international newspapers.

The site also links to key business resources such as stock quotes, corporate research, airline schedules and package-tracking services.

The office tool links are diverse and useful, including the Anonymizer site, where you can download software that protects your identity as you surf the World Wide Web. And, recognizing that even harried executives have a life outside the office (or at least fantasize about one), CEO Express offers links to travel and leisure sites.

Corporate Intelligence Sourcebook
home.dti.net/shadow/sourcebook/

PLAY CD UPDATE SECRET AGENT with this directory, marked by its esoteric selection of links to the darker side of business. Corporate Intelligence Sourcebook delivers the unexpected. Around one corner you'll find Lexis/Nexis, but around the next you'll wander into links to journals such as "Terrorist Profile Weekly" (check it out if you're traveling abroad). You never know when *that* might come in handy in the corporate arena. The Databases page is the most useful, serving up links to criminal registries (find out if any of your employees harbor secret pasts), an electronic-mail locator, worldwide Yellow Pages and other sources. Unfortunately, the Sourcebook's seven categories are sometimes unfocused. The Financial section, for example, is a hodgepodge of links to stock markets, war-gaming resources and corporate intelligence sites. Yet the site is too uneven and the text far too small. Still, it's worth bookmarking for those times when you just have to know who's hiding what.

RESOLUTION: *Get up to speed on a new technology that could help my company reach its business goals.*

The Wireless LAN Alliance Home Page
www.wlana.org/

GET THE EXECUTIVE VIEW of an emerging technology that promises to make corporate applications and real-time data more widely available in remote environments and even to make the network itself movable.

The Wireless LAN Alliance is a vendor consortium, but the material is presented evenhandedly and is sharply focused on the relevance of wireless LANs to day-to-day business systems. From the home page, click on the Intro button for information on applications and benefits, configuration and operations, technology options and a briefing on what customers should consider, as well as a good glossary of terms.

The User Success Stories button yields a page of relevant case studies. The Resource Directory page is a concise selection of related research, commercial and association sites.

The Neural Network FAQ
ftp://ftp.sas.com/pub/neural/FAQ.html/

THIS FREQUENTLY ASKED QUESTIONS (FAQ) page smartly addresses this complicated topic — parallel distributed networks that can store experiential knowledge for analysis — from the ground up. It certainly uses technical terms that will be unfamiliar to many, but the writing is straightforward and clear. And just about the time you're thinking, "How can I make this relevant to my company?" the FAQ offers links to research projects and real-world applications of neural nets across manufacturing, health care, financial services, transportation and other industries.

The FAQ, an organized file transfer protocol archive of postings to the comp.ai.neural-nets newsgroup, has seven parts. It deals with the nitty-gritty of how neural networks operate, what they can and can't do, the myriad communities using and researching them and other sources of information — and misinformation.

RESOLUTION: *Learn something new every day.*

LeadStory
www.bnet.att.com/leadstories/

RATHER THAT TRYING TO GIVE you all the top headlines, LeadStory picks one topic a day and intelligently digests related articles from newspapers, magazines and journals all over the Web.

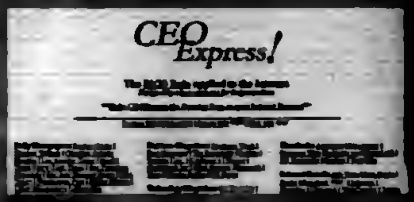
Each linked story examines a different aspect of the issue, and collectively they create one giant up-to-the-minute white paper.

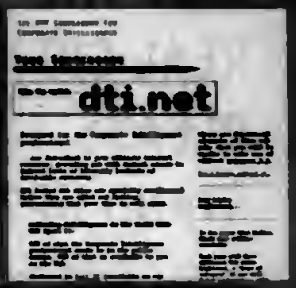
The topics aren't IS-specific, but they deal with IS- and business-related material frequently enough to merit regular checking.

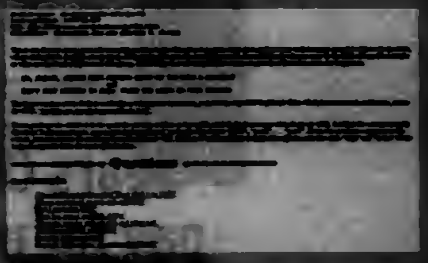
In mid-December, for example, the site featured "Repetitive stress injuries: A legal pain for the computer industry?"

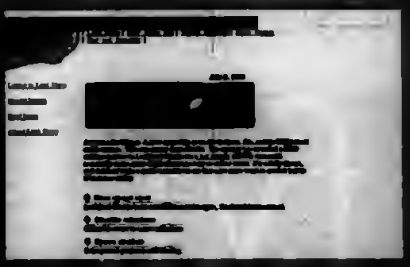
LeadStory anchored its links with a CNN story on the recent jury award in an injury suit against Digital Equipment Corp. It also offered links to related legal stories.

Goff is a freelance writer in New York.









WILL THE REAL CIO PLEASE STAND UP?

After more than a decade of tinkering with the titles, responsibilities and qualifications of the CIO, it's time to pull out the proverbial clean sheet of paper and reinvent the job.

The reason: CIOs now have more conflicting roles than Sybil had personalities. And that's not to mention the schizophrenic business-vs.-technology corporate culture gulch they inhabit.

Some history as to how we got to this fragmented state: Sometime during the 1980s, we made a momentous move (or so we thought) of changing the title of "data processing manager" to "chief information officer" — the CIO.

The job wasn't just about managing technology, we argued. We also had to manage information as a "corporate asset." There was celebration throughout data processing-land. Corporate status had been achieved. I guess that's what "officer" means.

A while later, we recognized that technology itself would become real important.

So, many companies — particularly technology companies — created an additional role and title of "chief technology officer," or CTO. It would be this person's job to watch for emerging technologies and advise on technology strategy.

In some companies, the development of the hierarchy went even further.

"Knowledge" was different from "information," it was argued — and "knowledge" is too important an asset to be left alone. So some companies created the role and title of "chief knowledge officer" — the CKO.

Now, having created these multiple jobs, somebody had to fill them. But management didn't necessarily trust the incumbent data processing manager in any of these roles. And it became in vogue to get someone from the business side to fill the CIO job. After all, understanding the business was more important than understanding technology — or so we thought.

There was only one problem. How could a person who was proudly ignorant of "dweebie" technology lead a company into the Information Age? With so much going on in technology, I see evidence that putting "line managers" into the CIO job may have actually clouded our future operating condition.

Furthermore, splintering this already complex job into CIOs, CTOs and CKOs only added to the confusion. The truth is, we have yet to find the right definition (and title) for the job of leading our companies into the Information Age. And, in general, we have yet to succeed in finding the right kind of manager to do it. Maybe that's because it's either everyone's job or it's the CEO's job or because there is no single person capable of doing it.

For example, some argue that, currently, CIOs have three almost mutually exclusive roles: a fiduciary role in managing IT assets, an implementer/integrator role in supporting business-change efforts and an innovator's role in which technology could create a breakthrough advantage, not only in products but channels.

The last area — leadership at the intersection of business and technology — is where the rubber meets the road. And that leadership is more important today. Why? Because information technology not only enables how we do our work, it's increasingly defining what the business is. And there is a confusing choice of technology strategies for any company. Where and how to place your bets is becoming increasingly critical.

So, what does the job take?

My best description — and unfortunately, it comes from the past — is some sort of "scientist statesman." It's a person who has a real understanding of where technology will go, a person who can sense what that may mean for the business strategically, a person with the guts and bearing to convince others of what the future will look like and a person capable of managing the transition.

You say there aren't enough of these people to go around. I say we haven't thought hard enough or looked far enough within our organizations to find the right person.

We have treated the CIO job as just another one of those slots that had to be filled. Or we have sought someone to fix a condition that has been troubling for some time; for example, all systems development is behind schedule or over budget.

What we should do is define the job as it must be done today. Nothing less will do. And we'll need a new title. How about "chief reinvention officer" — the CRO?

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His E-mail address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

f.y.i.

Sears CIO rethinks pay for performance

Sears Roebuck and Co.'s Chief Information Officer Joe Smialowski is juggling pay plans and weighing major technology decisions as he works to "reinvent" the information systems organization at the $35 billion retailer.

To help improve morale, lower-level IS staff will see increases in their base pay beginning next month, but they will have less opportunity to earn bonuses based on Sears' financial performance or their own work. Smialowski made the change after a survey found that younger staffers felt their pay was "too highly leveraged," meaning they could lose part of it if either they or Sears had a bad year, performance-wise.

But for those at the project manager level and above, "we will continue to put more of their compensation at risk," Smialowski says.

That's partly to prod IS managers to meet goals such as better and faster service to business users and continuing to cut costs.

In the past three years, Smialowski has already made impressive strides, cutting IS spending from 1.6% to 1.3% of revenue and reducing staff from 1,400 to 1,150 full-time equivalents.

But last fall, he told the IS organization it needed to strengthen relationships with business managers and that it needed to continue to cut costs by making "hard choices" to eliminate unnecessary projects.

About 200 IS staff members are working on eight committees to improve areas such as organizational structure, work processes and rewards and recognition within IS. At the same time, Smialowski and his staff are working on a new strategic IS plan.

— Robert L. Scheier

"Don't get left in the dust."

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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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Buyer's Guide

C-

CorelVideo Remote
Can deliver excellent video but has maturity and compatibility problems

B+

Intel ProShare Conferencing Video System 200
Performed the best for overall LAN and ISDN use, but installation is tricky

B

PictureTel Live200
Offers the sharpest picture and audio, but a few pieces are missing

B

RSI Business Traveler
An expensive, limited system with the appeal of a self-contained unit

DESKTOP VIDEOCONFERENCING

By Chris DeVoney

Desktop videoconferencing technology has always had excuses for its almost-acceptable quality and barely effective collaborative tools. But based on our tests for this review, the excuses are wearing thin.

We evaluated desktop systems from Corel Corp., Intel Corp. and PictureTel Corp. and a portable product from RSI Systems, Inc. Two vendors, Compression Labs, Inc. and VTEL Corp. (which are in the process of merging) and Vivo Software, Inc., declined invitations to participate.

We tested the systems on a Gateway 2000, Inc. P120 with a 120-MHz Pentium, a Gateway 2000 P5-200 with a 200-MHz Pentium processor, a Gateway 2000 P5-200/MMX running a 200-MHz Pentium MMX processor and a Micron Electronics, Inc. Millennium running a 200-MHz Pentium MMX processor. Each machine had Peripheral Component Interconnect (PCI) video, 100M bit/sec. Intel EtherExpress Pro/100 cards and a 17-in. monitor. We tested each card over Integrated Services Digital Network lines with test calls to and from each vendor, and on our LAN. We judged video quality, audio quality and the speed and ease of sharing Microsoft Corp. Office documents.

Desktop videoconferencing, page 82

DESKTOP

VIDEOCONFERENCING

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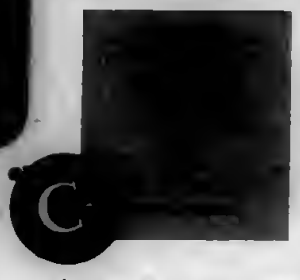


C

A MINOR HIT with desktop videoconferencing systems is that users lose eye contact with the camera when they look at the video display. But CorelVideo Remote offers a feature other makers should copy: A color camera whose lens sits just above the edge of the screen. This makes a Remote user always appear attentive even when studying the display.

Remote uses 128K bit/sec. ISDN but can handle high-quality video if it is used with a 384K bit/sec. ISDN connection and an optional $495 full-length Industry Standard Architecture (ISA) adapter card. The product, which can also serve as an ISDN modem, can dial in to Corel's LAN video solution but otherwise can't be used across the LAN.

Users always maintain eye contact, with CorelVideo Remote's camera angle

The ISA version, which connects to video boards via a feature connector, didn't work with our Diamond Multimedia Systems, Inc. Stealth 5000 video card and will restrict other cards from running at more than 256 colors and 800-by-600 pixels mode. Most users should opt for the PCI version to avoid these limitations.

The installation program was somewhat cryptic, and driver installation under Windows 95 was made more complex than it had to be, because Corel doesn't place the needed files in the root directory of the CD-ROM. The dialing program's interface is somewhat confusing.

Corel entered the videoconferencing market last year and just released Version 1.1 of the Remote software. With so many minor problems in the current product, we suggest you wait for Version 2.0 before you take another serious look.

B+

DESPITE its aging hardware, the Intel ProShare Conferencing Video System 200 handles its task well. Installation may be an overwhelming barrier, however.

The heart of the ProShare 200 is a set of two ISA cards. In systems that already have a modem and sound card, adding two ISA cards may be impossible. And the boards use two interrupt request spaces, which are precious on multimedia or networked machines.

Full-screen video window identifies other conferencing participants

Once installed, the unit performed well. On a network, the video was flawless. When using 128K bit/sec. ISDN, the images were acceptable at a 12-to-16 frame/sec. rate and slightly better when using a 200-MHz Pentium MMX computer. The dialer is easy to use, and the controls that pan or zoom the video and handle the audio are intuitive.

The ProShare software offers excellent whiteboarding and document sharing, and the system also works with Microsoft's NetMeeting software. The new ProShare 2.0A software doubles as an answering machine to accept video messages while you're out or screen calls while you're in.

Although the Intel system is relatively inexpensive, certain options can increase the cost. A full-duplex speakerphone costs $395, and the single copy of the LANDesk Personal Conferencing Manager required to use the units on a LAN costs another $495 and works only on Windows 3.x. Despite the added costs and problems in shoehorning the hardware into a computer, the ProShare 200 system deserves a close look.

Desktop videoconferencing, page 84

[redacted]

UP TO THE MINUTE

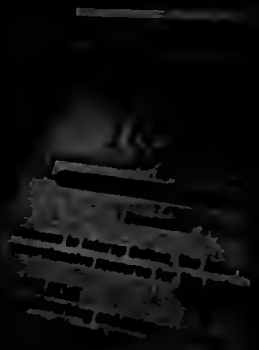
STARLIGHT NETWORKS, INC. announced that Smith Barney, Inc. will deploy its StarCast IP multicast and video-on-demand software across a satellite network to 470 remote branches. — *Network World*, Feb. 17

Low-end, inexpensive ($300) packages that outfit a PC for videoconferencing include **CONNECTIX CORP.**'s VideoPhone, **SPECOM TECHNOLOGIES CORP.**'s Internetvideo Phone, **VDONET CORP.**'s VDOphone and **WHITE PINE SOFTWARE, INC.**'s CU-SeeMe. These software-based desktop packages provide basic functionality via LAN, ISDN and serial modem connections. — *Network World*, Feb. 10

FIRST VIRTUAL CORP. in Santa Clara, Calif., announced software video applications to be launched on intranets with a Navigator or Internet Explorer browser. — *Computerworld*, Jan. 31

INTEL's new MMX chip, now appearing in PCs and notebook computers, will allow multimedia applications such as videoconferencing and presentation speed across users' screens.

MICROSOFT's NetMeeting 2, currently in beta testing, offers chat, a whiteboard, Internet telephone and videoconferencing for the Internet.



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DESKTOP VIDEOCONFERENCING

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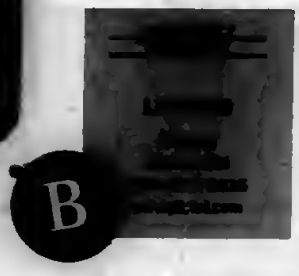


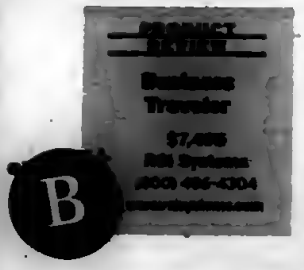
THE PICTURETEL LIVE200 is a credible videoconferencing product that is undergoing a metamorphosis. The current product delivers an acceptable picture and crisp sound over 128K bit/sec. ISDN. Microsoft has licensed PictureTel's LiveShare collaborative software for use in its NetMeeting software. The Live200 is also the only unit to offer full-duplex speakerphone audio as standard equipment.

If your company already has a PictureTel room-conferencing system, the Live200 has an advantage. Although all units in this review can work with one another and with room systems over ISDN (the H.320 standard), the Live200 offers more clear, crisp video and audio than other units — and even better quality when connecting to a PictureTel room system.

Live200 is interoperable with all other PictureTel desktop and group videoconferencing systems

But the Live200 is missing several pieces. It doesn't work over a LAN, isn't fully compatible with Microsoft's NetMeeting and doesn't offer a 384K bit/sec. ISDN connection. Expect LAN capability soon and NetMeeting compatibility plus add-on hardware for 384K bit/sec. ISDN rates by year's end.

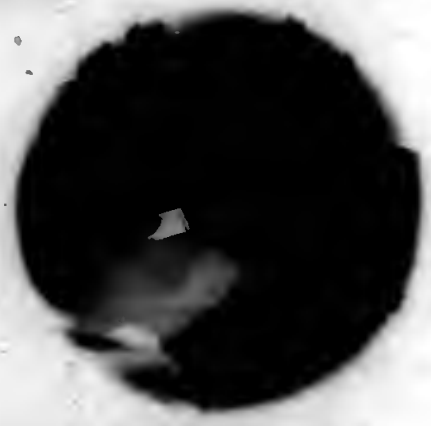
Given its good picture and excellent sound, the Live200 is a sure shot for connecting a remote office to the corporate office. With some patience, the LAN, full-motion video and universal document conferencing pieces will fill out a good choice.



THE RSI BUSINESS TRAVELER is a stand-alone videoconferencing-only system. Self-contained in a suitcase and weighing in at more than 30 pounds, the Business Traveler is an ideal but expensive solution when videoconferencing on the road is crucial.

The unit sets up in about five minutes, with or without a computer. For computerless operation, the unit connects to a television. Otherwise, the unit hooks to a Macintosh or Windows PC via the SCSI-2 port. It includes a full-duplex speakerphone and a remote-controlled pan-and-zoom camera.

In testing, the picture and sound quality was excellent for 128K bit/sec. ISDN, which still shows minor jerkiness. Unfortunately, the unit doesn't offer document conferencing software, and few hotels offer ISDN lines in their rooms. But if your needs are mobile and you stay at the right place, the Business Traveler keeps you in the picture.



Portability sets RSI's Business Traveler apart from other videoconferencing systems

DeVoney is president of Seattle-based DVA, Inc. and can be reached at chrisd@cybercritic.com.

USER VIEW

Videoconferencing still needs work

by Joseph Jasson

Along with [illegible] the end of the fourth estate [illegible] videoconferencing was [illegible] 1964 World's Fair in New York. Well, here we are [illegible] with renewed promises of desktop videoconferencing, and it still isn't quite [illegible] it needs to be.

My company, Amoco Corp., is like many organizations. The clear business drivers for desktop videoconferencing is the need to work together regardless of distance. Our goal is to arrive at decisions and to work on team projects without forcing the team to fly to one location.

When several of the Chicago-based applications support folks were asked if they would move from Chicago to Tulsa last year, they found a new affinity for the idea of sharing Windows-based applications while viewing one another through a desktop videoconferencing system. Rather than move expertise and transfer technology from one location to another, Amoco set out to evaluate desktop videoconferencing systems, including Intel's ProShare Conferencing Video System 200, [illegible] Systems' Eris and PictureTel's Live 200 — all fully H.320-compatible with room videoconferencing systems.

Overall, the [illegible] has been acceptance, in part because of Internet [illegible] dialup primarily related to ISDN [illegible] acceptance hinges [illegible] process, and this hasn't been [illegible] but we also like the Eris unit [illegible] We're also investigating the lowest-cost [illegible] PictureTel software's CU-SeeMe, [illegible] various H.323-compatible tools, which [illegible] robust.

Amoco now has [illegible] with videoconferencing. Overall, [illegible] difficult, with the [illegible] and [illegible] also requires two cards [illegible] didn't have two slots available. [illegible] problems were associated with getting ISDN to the desktop. ProShare does offer two connection options: Internet (TCP/IP) and ISDN. A local LAN segment would be fine for carrying the sporadic burst bit/sec. traffic, but the WAN monkey may route traffic over a lower-bandwidth path. We also wanted compatibility with our more than 35 full-size videoconference rooms, so our [illegible] was to require ISDN.

Amoco is waiting for costs [illegible] before an adequate [illegible] effort. As costs fall, performance [illegible] to improve. A room-size videoconferencing [illegible] $30,000 and $100,000, while reasonable-quality desktop systems can cost approximately $1,500 — and that price is dropping quickly. The least expensive desktop videoconference systems, such as CU-SeeMe and NetMeeting, achieve excellent application sharing results but are quite poor for [illegible] quality.

The verdict is still out on our desktop videoconference efforts as we struggle with success/failure criteria. We don't like "time savings" and other nebulous soft benefits and aren't comfortable with simple travel avoidance numbers.

What Amoco would like to ultimately create is an instant (portable) worldwide collaborative environment. We aren't at this stage yet, but the recent spate of desktop videoconference tools, along with implemented ITU standards (H.320, H.323, T.120) that comprise a collection of low-cost groupware components, may finally offer reality to the premises.

Jasson is an information technology consultant at Amoco in Chicago.

In Depth

The Association for Computing Machinery (ACM) was founded in 1947, which makes it the elder statesman of information technology groups. To celebrate its 50th anniversary, the ACM is looking ahead to the next half-century.

One major marker in this celebration will be the March publication of *Beyond Calculation: The Next Fifty Years of Computing.* Editors Peter J. Denning and Robert Metcalfe invited nearly two dozen of the industry's pioneers and clear thinkers to submit essays. The collection looks at scientific, social and economic effects of the continuing revolution in computing.

Computerworld is devoting four In Depth sections to exclusive excerpts from *Beyond Calculation.* This week's chapter, the last in the series, is by Terry Winograd, professor of computer science at Stanford University.

A broader brush

By Terry Winograd

As computing mingles with social disciplines, new professions will evolve

IN THE NEXT 50 YEARS, the increasing importance of designing spaces for human communication and interaction will lead to expansion in the aspects of computing focused on people, rather than machinery. The methods, skills and techniques concerning these human aspects are generally foreign to mainstream computer science, and it is likely that they will detach (at least partially) from their historical roots to create a new field of "interaction design."

The computing industry will continue to broaden its boundaries — from machinery to software to communication to content. The companies that drive innovation will not be those that focus narrowly on technical innovation but those that deal with the larger context in which the technologies are deployed.

A broader brush, page 86

A broader brush

CONTINUED FROM PAGE 85

As the focus of commercial and practical interest continues to shift, so will the character of the people engaged in the work. The most exciting new research and development in computing will not be in traditional areas of hardware and software but will be aimed at enhancing our ability to understand, analyze and create interaction spaces. The work will be rooted in disciplines that focus on people and communication, such as psychology, communications, graphic design and linguistics.

As computing becomes broader as a social and commercial enterprise, what will happen to computer science as a professional discipline? Will it extend outward to include graphic design, linguistics and psychology? What would it mean to have a science of that breadth? It is more realistic to imagine that computer science will not expand its boundaries but will in fact contract them while deepening its roots.

Much of the commercial success of computing-related industries will be driven by considerations outside the technical scope of computer science as we know it today, but there will always be new theories, discoveries and technological advances in the hardware and software areas that make up the core of the traditional discipline.

As an analogy, consider the world of the automobile. Success in today's automotive market is determined by many factors that have little to do with science and engineering. They range from positioning a vehicle in the market to associating it with an appealing emotional image. Engineering is still important and relevant — but it isn't the largest factor for success, and it isn't the dominating force in the automobile industry.

Beyond Calculation: The Next Fifty Years of Computing
Edited by Peter J. Denning and Robert Metcalfe; Copernicus, New York; 320 pages; $27 (hardcover)

We can expect the same kind of decoupling in the computer world. The flashy and immensely lucrative start-up companies will depend less on new technical developments and more on the kinds of concerns that drive the automobile industry. The computing industry will come to encompass work from many different professions — one of which will be the computer science profession, which will continue to focus on the aspects that can be best approached through its formal theories and engineering methods.

In the midst of this interdisciplinary collision, we can see the beginnings of a new profession, which might be called interaction design. While embracing many disciplines, it has a distinct set of concerns and methods. It draws on elements of graphic design, information design and concepts of human/computer interaction as a basis for designing interaction with (and habitation within) computer-based systems.

Although computers are at the center of interaction design, it is not a subfield of computer science. Software is not just a device with which the user interacts; it is also the generator of a space in which the user lives. Interaction design is related to software engineering in the same way architecture is related to civil engineering.

As well as being distinct from engineering, interaction design does not fit into any other existing design fields. If software were something the user just looked at rather than operated, traditional visual design would be at the center of software design. If the spaces were actually physical rather than virtual, then traditional product and architectural design would suffice. But computers have created a new medium — one that is both active and virtual. Designers in the new medium need to develop principles and practices that are unique to the computer's scope and fluidity of interactivity.

We have begun to explore this domain, but we are far from understanding interaction design.

A striking example is the chaotic state of Web page design. The very name is misleading in that it suggests that the World Wide Web is a collection of "pages," and therefore that the relevant expertise is that of the graphic designer or information designer. But the "page" today is often much less like a printed page than a graphic user interface — not something to look at but something to interact with. The page designer needs to be a programmer with a mastery of computing techniques and programming languages such as Java.

Yet something more is missing in the gap between graphic arts and programming. Neither group is really trained in understanding interaction as a core phenomenon. They know how to build programs, and they know how to lay out text and graphics, but there is not yet a professional body of knowledge that underlies the design of effective interactions between people and machines and among people using machines. With the emergence of interaction design in the coming decades, we will provide the foundation for the "page designers" of the future to master the principles and complexities of interaction and interactive spaces.

CULTURAL CHANGES

Imagine that on the 50th anniversary of a fictitious Association for Automotive Machinery, a group of experts in the 1940s was asked to speculate on the next 50 years of driving. They might well have envisioned new kinds of engines, automatic braking and active suspension systems. But what about interstate freeways, drive-in movies and the decline of the inner city? These are not exactly changes in driving, but in the end they are the most significant consequences of automotive technology.

Successful interaction design requires a shift from seeing the machinery to seeing the lives of the people using it. In this human dimension, the relevant factors become hard to quantify, hard even to identify. This difficulty is magnified when we try to look at social consequences.

Will the computer lead to a world in which our concept of individual privacy is challenged or changed? Will online addiction become a social problem to rival drug use? Will political power gravitate toward people or institutions that have the most powerful communications technologies or who aggregate control over media? Will there be a general turning away from computing technologies in a "back-to-nature" movement that re-emphasizes our physical embodiment in the world?

There is a complex interplay among technology, individual psychology and social communication, all mixed in an intricate, chaotic system. Details that seem insignificant today may grow into major causal factors over the next 50 years. Trends that seem obvious and inevitable may be derailed for what currently appear to be insignificant reasons.

JOHN HADDAD

Interaction design in the coming 50 years will have an ideal to follow that combines the concerns and benefits of its many intellectual predecessors. Like the engineering disciplines, it needs to be practical and rigorous. Like the design disciplines, it needs to place human concerns and needs at the center of design; and like the social disciplines, it needs to take a broad view of social possibilities and responsibilities. The challenge is large, as are the benefits. Given the record of how much computing has achieved in the last 50 years, we have every reason to expect this much of the future.

Winograd's early research on natural language understanding by computers has been widely cited in the field of artificial intelligence. He has written and edited several books, including Understanding Computers and Cognition: A New Foundation for Design *(cowritten with Fernando Flores) and* Bringing Design to Software *(co-edited with John Bennett and Laura De Young).*

Winograd is a founder of Action Technologies, Inc., which is a developer of workflow software, and sits on the national board of Computer Professionals for Social Responsibility, of which he is a founding member and past president. At Stanford, he directs the Project on People, Computers, and Design and is developing a teaching and research program on human/computer interaction design.

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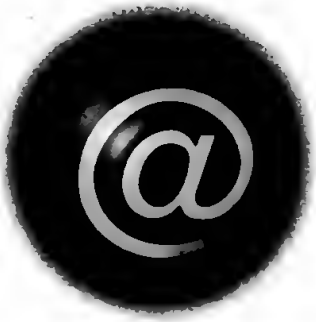

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BREACH of FAITH

When IS employees are asked to sign "stay-on" contracts in exchange for expensive training, most will. But the real cost comes in loss of loyalty.

By Dana Crenshaw

"Tom, can I talk to you for second?"

Tom enters his manager's office.

"Tom, we have your request to attend SAP training. It has been approved. However, you may attend the training only on the condition you sign this agreement. Take a moment to look it over, sign it and then return it to me."

Tom takes the document hesitantly and wonders what he did to invoke distrust from his manager. After reading the document thoroughly, Tom reluctantly signs the agreement and returns it to his manager.

Though not an actual encounter, the above scenario is reflective of what's happening in a growing number of information systems organizations, where IS employees are asked to sign "stay-on" contracts in exchange for investments in specialized training.

Computerworld asked several IS professionals to share their experiences and thoughts on such contracts. Most employees said they would sign an agreement if asked to do so. But more than half indicated that they would leave their current employer if the right job opportunity came along before the agreement expired.

In general, IS employees view the agreement as a sign of distrust and insecurity on the part of the company. And if push came to shove, most employees said they would expect their new employer to handle any penalty — either by paying the former company or giving the employee a signing bonus as compensation.

Bruce B. Wilson
Software engineer
TRW, Inc., Atlanta

"When I first learned our programming teams were to receive PowerBuilder training, I was excited. This sounded like the first step that needed to be taken toward moving toward a Windows development platform. But when I first heard we would be required to remain with our current employer for at least six months or pay the expensive training costs, I was not very happy.

"Although it sounded like indentured slavery, I signed on the line and took the training. Upon reflection, this doesn't sound so horrible and does, in fact, sound fair. Ironically, we received the training, but we have not had any chance to use the training."

Alan Knight
Director
Providers of Telecommunications Training
Kurnow, U.K.

"Many years ago, I was sent such an agreement as a condition of being enrolled in a four-year degree course. I was annoyed that they thought I could be that disloyal and sent it back without comment and unsigned. I got in the course anyway and worked for them for many years after the course.

"I do believe that old-style agreements, if they have no obligations on the employer's side concerning terms of employment, are 'binding in honor' only.

Sean Green
Network administrator/engineer
NCR Corp., Atlanta

"I was approached about signing a training agreement when I requested training while at my former company. Even though I signed, I disagreed with the concept of the agreement because it was based on the insecurity of the company. The company [was] afraid I would take the training and then leave.

"I signed the agreement because I really had not been with the company for long. I had only been there a little longer than a year. So, I did not discuss it with anybody; I just signed. Now, I don't think I would sign one because I have already paid my dues. I am a five-year veteran, and by now, I have proved my loyalty and should not have to sign an agreement to receive training."

Phil Weber
Independent software consultant
Tigard, Ore.

"I probably would [sign an agreement], but I think it sends a negative message about a company's willingness to invest in its people.

"If I was asked to sign such an agreement as a condition of employment, I probably would not accept a job with this company, not because of the agreement itself, but because of the underlying attitude it betrays."

Robert B. Dickson
Data administrator
Family Restaurants, Inc., Irvine, Calif.

"I've heard of this policy from time to time. It clearly sends a signal to the employees that management doesn't trust them. Bad idea.

"Rosabeth Moss Kanter, in her book *When Giants Learn To Dance*, states that companies can't guarantee lifetime employment, but they should guarantee lifetime employability — by training the staff in skills currently demanded in the market. That way if the company has to lay off employees, they should at least go into the market with current skills."

Crenshaw is a freelance writer in Austell, Ga.

TIES THAT BIND

Computerworld asked John M. Stec, an attorney in Barrington, Ill., under what conditions training contracts are legally binding for IS professionals.

CW: *Can you provide insight into the legal aspect of these agreements?*

STEC: I am familiar with them. I have prepared a couple of them. [The agreements are] as binding as any other contract. There needs to be a meeting of the minds as to what is being agreed to and, for that reason, it should be in writing [with] some consideration to bind the parties. Specifically, in Illinois — as is the case I believe in most states — if an employee is offered and accepts a knowing choice between taking the training and staying without reimbursement, or with reimbursement if he or she leaves, the employee and employer have entered into a contract. Once the employee takes the training, he has committed to either staying or reimbursement. Additionally, there is no way that the employer can enforce an obligation to keep the employee working — there is no indentured servitude in the U.S. — but reimbursement of monetary damages may be enforceable.

CW: *Let's say a programmer has signed a 12-month agreement for training in client/server technology. Three months into the contract, he is let go because of cutbacks, not his performance. Is the company obligated to keep him around for 12 months?*

STEC: Typically my agreements specify that the contract that supplies the obligation to reimburse does not alter the at-will employment relationship between the parties. Thus, the employee may be terminated at the discretion of the employer and, of course, is thereby not obligated to reimburse for the training. There may be an open issue here as to whether the employer must fund the training for the employee if he or she is let go in the training period and then desires to pursue it on his or her own time after being laid off.

CW: *Are you familiar with any cases on this issue?*

STEC: None that I am aware of.

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Consultant. Design, develop, implement & test software applications for management information systems using client/server & object-oriented methodology. Tools: Visual Basic; Windows 95, MS-Access; C++. M.S. in Computer Science as well as 2 yrs exp. in job offered or as Software Engineer required. Previous exp. must include: Visual Basic; MS-Access; C++. 40 hrs/wk, 8am-5pm, $51,205/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Cathy Sutton-HR, Whittman-Hart, Inc., 311 S. Wacker Drive, Ste. 3500, Chicago, IL 60606 REF# 2241. (312) 922-9200.

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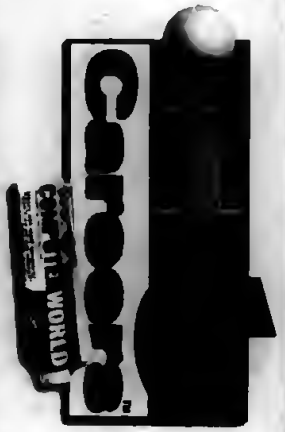

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than to be an IS professional fielding job offers in the Research Triangle region - Alan R. Earls

INFORMATION systems jobs are plentiful in North Carolina, thanks to a robust local economy and continued expansion of technology firms in the Research Triangle area.

Compensation rates are trending upward. And according to the Employment Security Commission of North Carolina, unemployment dropped to a bare 4% last October — which is effectively "almost zero unemployment," one hiring manager says.

That compares with a year earlier when the market was already heating up and unemployment was only 4.4%. "We are continuously working to improve our business climate in North Carolina and . . . many companies have taken notice," says David Phillips, the state's commerce secretary.

"The market is standing straight up," says Daren Bitter at RHI Consulting in Charlotte, a placement firm and a division of Robert Half International, Inc.

Bitter says demand is represented across a wide range of skills, including trainers, support desk staff, technical writers, networking, client/server development and — driven by year 2000 conversion efforts — Cobol, DB2 and CICS.

"Charlotte is stereotyped as a banking town. But there is actually more manufacturing than banking in this [area], and we see a lot of the newer technologies with both," Bitter says.

TECH BOOM

The job market is equally rosy in the western half of the state. Frank Schoff, president of Management Recruiters, Inc. in Cedar Mountain, says it's a great time to be in information technologies, at any level. The region's lower cost of living means the increasing levels of compensation represent a growth in real buying power.

Employers from a range of sectors support this view of the region's market. "Right now the biggest need we are facing is for legacy-oriented programmers," says Andre Goodlett, strategy staff planning supervisor at Food Lion, Inc. in Salisbury. That need is driven by year 2000 efforts.

Food Lion also needs project managers, having found that downsizing away that layer of IS management is actually counterproductive, Goodlett says.

"In those skill sets, it is a sellers market, where you can name your price," Goodlett says.

As a result, Food Lion is recruiting extensively outside North Carolina and is relying heavily on contractors.

"But we find that, especially with legacy skills, there just aren't enough people available, and the quality of those we are able to locate is going down," Goodlett says.

GOVERNMENT OPPORTUNITIES

State government is also facing a large year 2000 repair bill — perhaps $50 million in the next three years. And that means lots of opportunities for IS professionals, says Ziegler Miller, assistant secretary for planning, development and technology at the North Carolina Department of Revenue in Raleigh.

"We find that the vendors are gobbling up all the resources, so that those traditional skills like Cobol are very much in demand," Miller says. But because the state is tackling year 2000 as part of an upgrade and modernization effort, there is also plenty of work in client/server environments.

"The job market is very favorable for college graduates with two to three years of experience with C, C++, Unix, middleware, telecommunications or networking technologies like [Novell, Inc.] NetWare," Miller says.

A similar tale is told at the federal level, where Denise Kleinfelter, chief of systems programming at the National Center for Health Statistics in Durham is facing year 2000 conversion challenges.

"We are planning on revisiting any kind of homegrown programming and database applications," Kleinfelter says. "It may affect the hiring of contractors the most. Many times you have employees [with traditional skills] who have retired or gone on to private industry."

Kleinfelter says the agency is trying to decide whether to revisit older applications where the human infrastructure is no longer available to support them or to rewrite the applications with newer technologies.

Decision-making is slowed by funding cutbacks, she says. But somehow the work must get done.

Of course, some organizations are ahead of the curve on year 2000. James Euliss, director of IS at ICI Americas, Inc. in Durham, admits the region is a good market for IS professionals. But he says his firm isn't looking to ramp up in the near future. "Our operating systems are already compliant," he says.

Earls is a freelance writer in Franklin, Mass.

MONEY FOR THE MASSES

IS salaries fare better at the lower ranks in the Research Triangle region, reflecting the high demand for talent

JOB TITLE	RALEIGH-DURHAM-CHAPEL HILL	NATIONAL AVERAGE
CIO/VP	$76,000	$96,000
Director of systems development	$49,000	$74,000
Senior systems analyst	$51,000	$54,000
Programmer/analyst	$44,000	$39,000
Lead computer operator	$36,000	$31,000

Source: Computerworld's 1996 Annual Salary Survey

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6. **Kmart**
7. **USAir,** *Winston-Salem*
8. **Burlington Industries,** *Greensboro*
9. **Fieldcrest Cannon,** *Kannapolis*
10. **Carolina Power and Light,** *Raleigh*

Source: North Carolina Employment Security Commission. All listed firms have at least 1,000 employees but state law doesn't permit release of exact employment totals.

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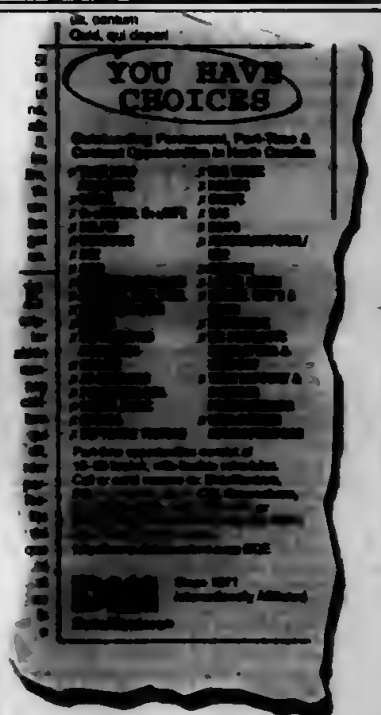

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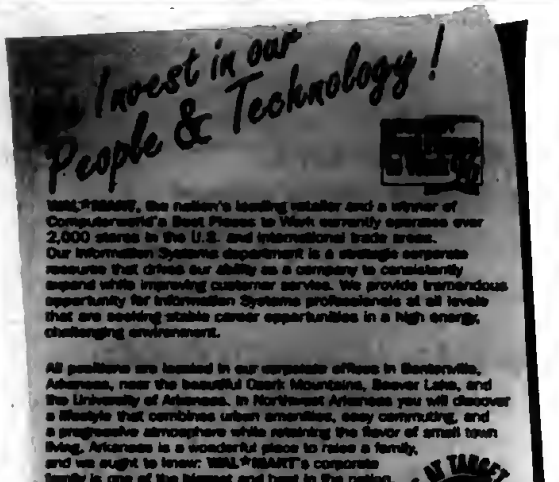

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Programmer/Analyst (Orlando FL client site) Analyze requirements, design, develop, code, test, implement and maintain programs for commercial and financial applications systems using RPG/400 in an IBM AS/400 environment. Bachelor's Degree in Comp. Sci, Engineering, or Math + 2 yrs exper in job req. $37,500/yr; 40 hr/wk; 8:30 a.m.-5 p.m. Send resume to: Job Service of Florida, 1001 Executive Center Drive, Orlando, FL 32803-3520. Re: Job Order No. FL-1558985

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SENIOR PROGRAMMER ANALYST (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m., $51,500/yr. Carry out the preparation of software application program specifications, development and testing of programs and provide assistance in implementation utilizing C, COBOL, DB2, PL/I, ORACLE and UNIX. Reqr. bachelor's degree in Computer Science or Electrical Engineering or Mechanical Engineering. Reqr. 3 yr. exper. in job offered or 3 yr. exper. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr. work experience in developing s/w applications systems and with C, COBOL, PL/I, ORACLE and UNIX. Employer is a s/w development/consulting firm. Relocation to client sites throughout U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 150896.

Programmer/Analyst (Orlando, FL client site) Analyze requirements, design, develop, code, test, implement and maintain programs for commercial and financial applications systems using RPG/400 in an IBM AS/400 environment. Bachelor's Degree in Comp. Sc., Engineering, or Math + 2 yrs. exper. in job req. $37,500/yr., 40 hr/wk, 8:30 a.m.-5 p.m. Send resume to Job Service of Florida, 1001 Executive Center Drive, Orlando, FL 32803-3520. Re: Job Order No. FL-1551930.

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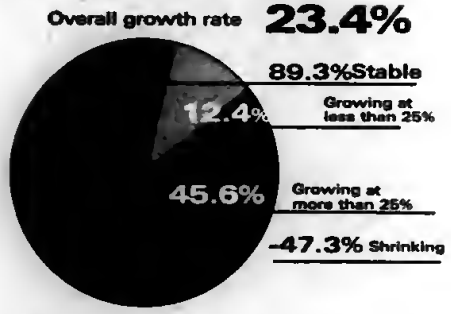
Career Survey: Computer Hardware

Industry Hiring Trends



Survey base:
801 Computer Hardware

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Regional Growth Analysis

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SOFTWARE ENGINEER: (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m., $55,000/yr. Carry out the analysis, design and development of software application systems, analyze user requirements and assist in implementation utilizing IBM mainframe, MVS, IMS DB/DC, DB2, COBOL, and ASSEMBLER. Reqr. bachelor's degree in Computer Science, or Electrical Engineering or Mechanical Engineering or equivalent. Reqr. 3 yr. exper. In job offered or 3 yr. exper. In Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Equivalent includes 7 yrs. exper. in job offered or related occupation in lieu of bachelor's degree and 3 yrs. exper. in job offered or related occupation. Reqr. work experience developing application systems and with IBM mainfrm, MVS, IMS DB/DC, DB2, COBOL, and ASSEMBLER. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid adv." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 150888

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SENIOR PROGRAMMER ANALYST: (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m. $51,500/yr. Carry out the preparation of software application program specifications, development and testing of programs and provide assistance in implementation utilizing C, COBOL, DB2, PL/I, ORACLE, and UNIX. Reqr. bachelor's degree in Computer Science, or Electrical Engineering or Mechanical Engineering. Reqr. 3 yr. exper. in job offered or 3 yr. exper. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr. work experience in developing s/w applications systems and with C, COBOL, PL/I, ORACLE, and UNIX. Employer is a s/w development/consulting firm. Relocation in client sites throughout U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid adv." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 150896.

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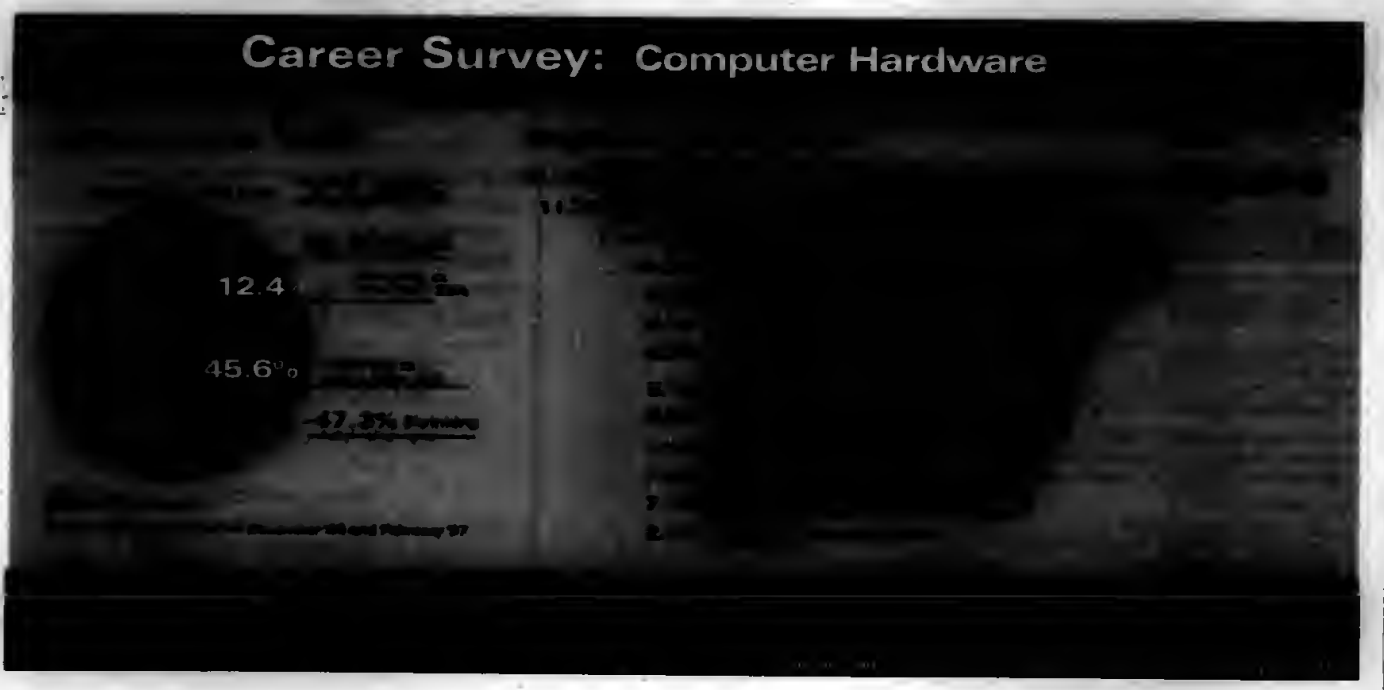

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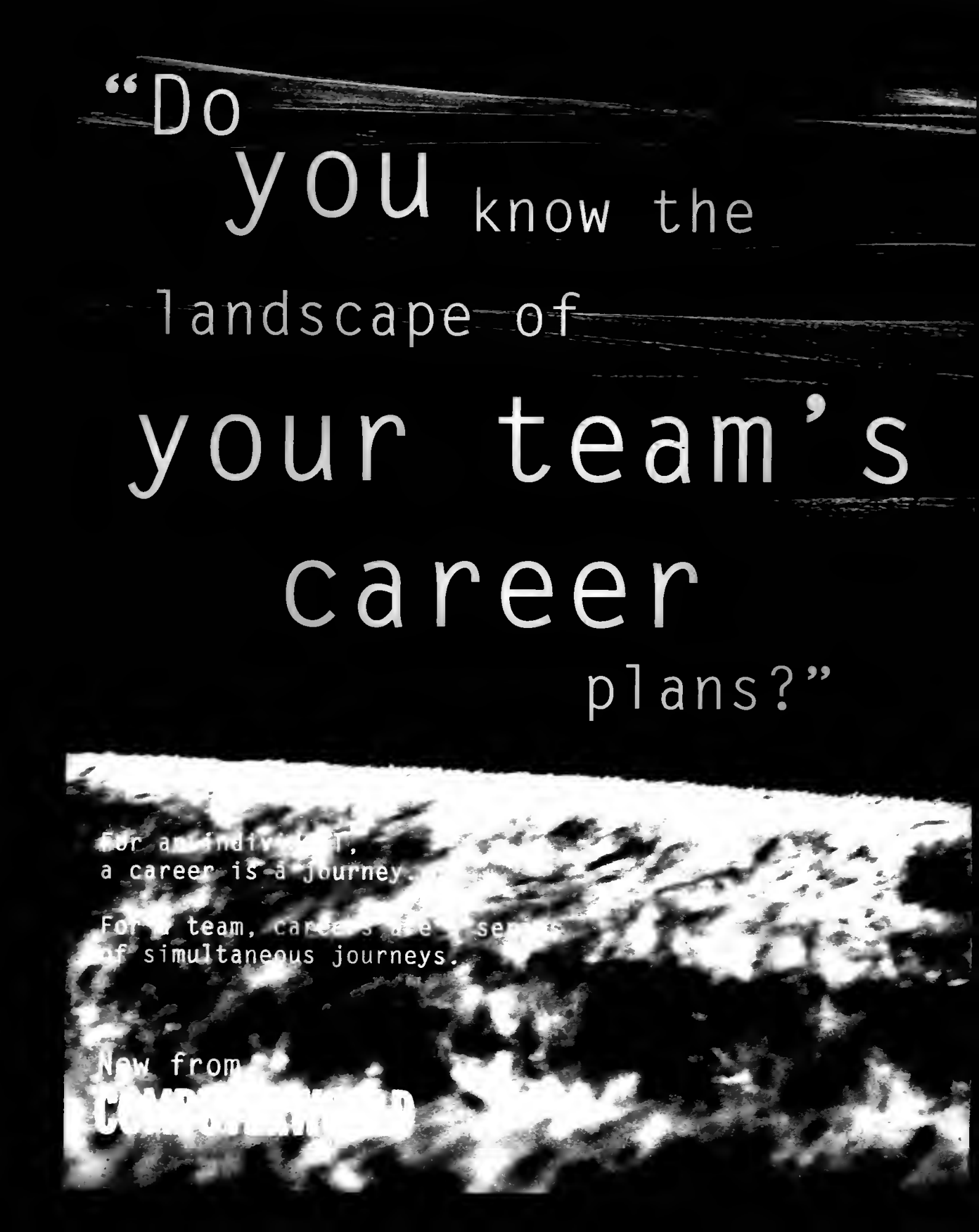
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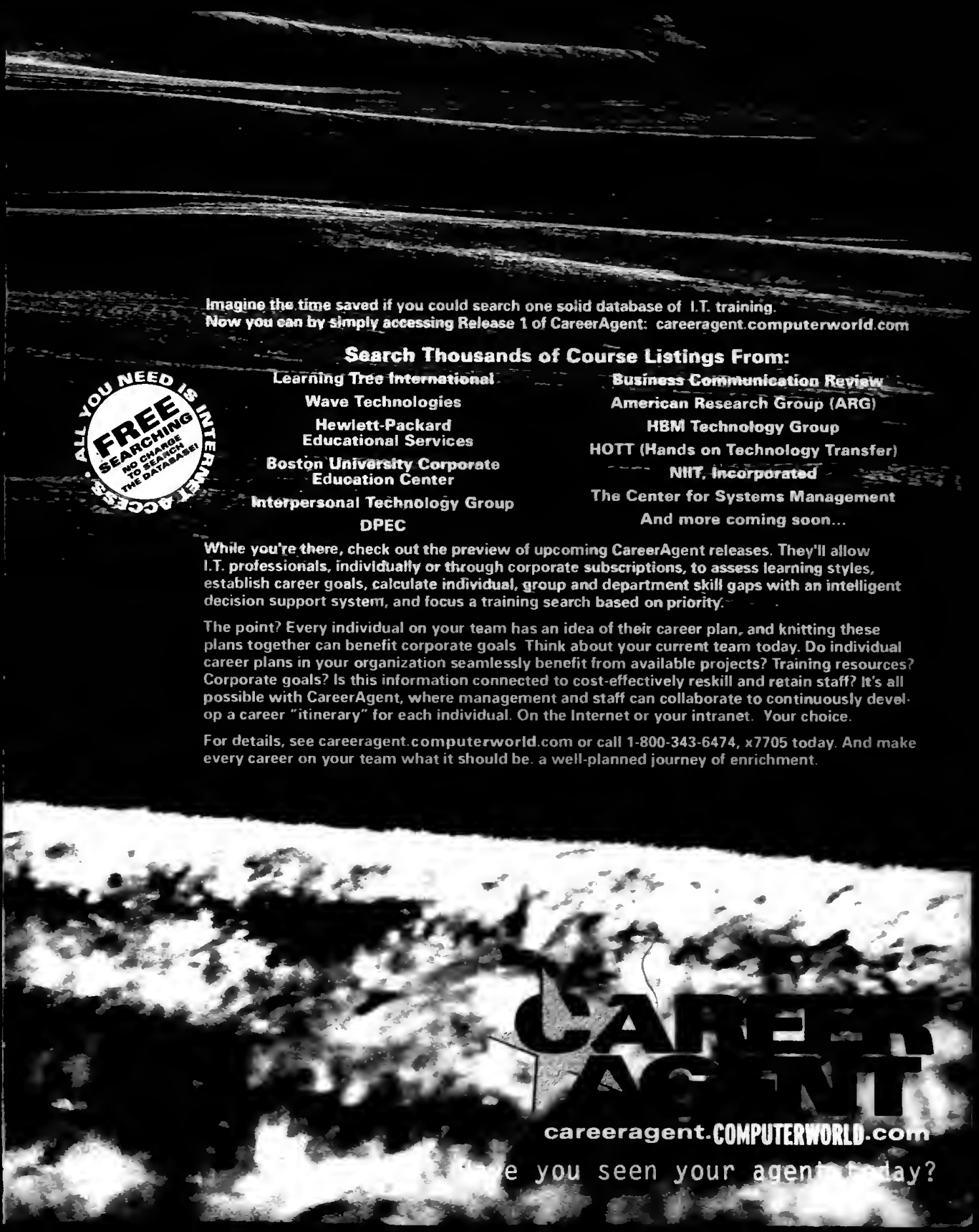
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TECHNOLOGY WATCH

Many ways to share . . . CD-ROMs

By Amy Malloy

YOU HAVE A library of data-intensive CD-ROMs that multiple users need to access. But you don't want to buy a copy for each user, and you don't want to run from terminal to terminal inserting CD-ROMs. The logical conclusion is to share CD-ROMs across the network.

The decision to share CD-ROMs may be simple. Devising the best approach requires more thought because options abound and costs vary from the low hundreds to tens of thousands of dollars.

The high-end prices will go down, predicts David Strom, president of David Strom, Inc., a consultancy in Port Washington, N.Y. Price deters some companies from adopting a CD-ROM networking solution, analysts say.

Phoenix-based MicroTest, Inc.'s CD-Now is one of several software packages that can turn a desktop into a CD-ROM server. Another option, placing CD-ROMs on a regular file server, lets users share titles, but analysts say this is easier in a Microsoft Corp. Windows NT environment than a Novell, Inc. NetWare environment.

"If you are running NetWare, can it handle the additional burden of running CD-ROM?" asks David Doering, president of TechVoice, Inc., a consultancy in Orem, Utah. If it can't, a stand-alone product might work best, he says. But vendors also offer CD-ROM server software for the NetWare environment.

Some of the stand-alone, plug-and-play products cost less than other solutions, but those products offer less capacity, says Ken Weilerstein, an analyst at Datapro Information Services Group, Inc. in Delran, N.J.

Mediapath Technologies, Inc. in Mount Laurel, N.H., offers another type of product, MediaAgent, which catalogs, tracks and provides networkwide access to CD-ROM titles. Strom recommends MediaPath for companies that move around a lot of CD-ROMs. "As soon as you get a dozen-plus CD-ROMs, you can lose track," he says.

FACTORS TO CONSIDER

When choosing a solution, look at how many users will share the CD-ROMs, the users' locations and how many routers the information will go through — with every router hop, there is a cut in performance, Strom says.

When purchasing CD-ROMs to share, make sure the CD-ROM will run over the network. In some cases, only a network version of the CD-ROM will work in this environment, or a CD-ROM might require additional licenses.

"You may violate the license if you only bought a single application," Doering says.

The CD-ROM market is currently undergoing changes. The Internet and forthcoming Digital Video Disc (DVD) drives — which will store as much as 17G bytes, as opposed to the 650M bytes that CD-ROMs hold — alter the means of sharing information. So companies may outgrow current CD-ROM networking solutions.

But vendors do offer intranet solutions — an evolving trend — for sharing CD-ROMs; the Internet and CD-ROMs are not distinct areas anymore, Weilerstein says. Hypertext Markup Language provides common ground where proprietary packages and competing vendors exist, he says.

DVD drives and software will soon replace CD-ROM drives and software. Freeman Associates predicts that by 2001, DVD drive sales will total 89 million and CD-ROM drives sales will be zero. The Santa Barbara, Calif.-based research firm estimates that 3 million DVD drives and 62 million CD-ROM drives will be sold this year.

Malloy is Computerworld's assistant researcher.

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[illegible]	1.88

INDUSTRY ALMANAC

Tricord stops making servers

When Tricord Systems, Inc. (Nasdaq: TRCD) began to lose market share during the past year, it needed to fight back. Its high-end enterprise servers, which can run Windows NT and Unix operating systems, were being overtaken by lower-priced Wintel-based servers from major vendors. Instead of battling the market head-on, Tricord has decided to take advantage of it.

Tricord officials last week said the company would stop making servers and concentrate on its network-attached storage products for Windows NT. But Tricord's decision to end server sales by year's end did little to boost its standing on Wall Street. Its stock tumbled to less than $1 by the middle of last week.

The company's network-attached storage software product was part of its enterprise server but wasn't sold separately. It is a distributed file system for Windows NT that can manage a server's workload and boost performance.

Analysts say they aren't surprised by the move. They say it was a result of competition from companies that sell Intel Corp.-hardware platforms that run Windows NT. That, along with aggressive pricing, shrinking margins and strong reseller connections by companies such as Compaq Computer Corp., is making it difficult for the smaller server makers to thrive.

"Wintel has gobbled them up," says Jim Gordon, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Tricord is banking on Windows NT's growth to increase demand for storage that links directly to the network, says Sean Derrington, an analyst at Meta Group, Inc. in Stamford, Conn. "While I think it is a good move technically, I still think they have some opposition to face in the market," he says.

— Patrick Thibodeau

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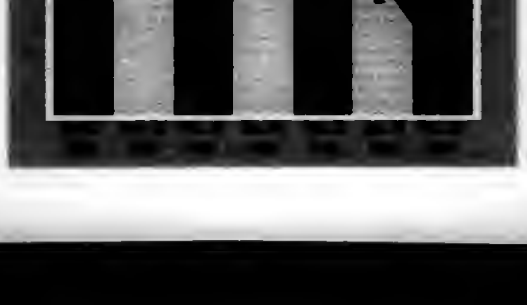

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BNYN	10.75	3.25	Banyan Systems Inc	7.00	-0.38	-5.1
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MUEI	25.00	8.75	Micron International Inc.	16.50	0.25	1.6
NIPNY	85.00	28.38	NEC America	16.50	-0.25	-0.4
SGI	30.13	17.88	Silicon Graphics	24.50	-1.88	-4.0
SUNW	35.13	20.38	Sun Microsystems Inc.	20.25	-1.50	-4.0
OTC						
AMH	15.88	9.13	Ashton Corp	11.25	0.38	3.5
DGN	19.88	9.00	Data General Corp (N)	15.50	0.75	6.0
DEC	75.88	39.25	Digital Equipment Corp	33.63	-0.63	-1.8
IBM	190.63	90.13	IBM	175.00	-0.50	-0.8
MDCD	20.25	1.88	Meridian Data Inc	4.50	0.13	2.8
NETF	8.13	2.25	NetFrame	6.00	0.00	2.5
SQNY	30.13	10.13	Sequent Computer Sys.	20.25	-0.69	-3.3
SEQS	8.63	6.69	Sequoia Systems Inc.	8.00	0.50	7.7
SRA	13.50	16.63	Stratus Computer Inc. (N)	21.50	0.00	0.0
TDM	15.25	8.69	Tandem Computers Inc.	12.50	0.13	0.9
UIS	9.13	6.00	Unisys Corp.	8.00	0.00	0.0
NYSE						
ADBE	45.13	28.38	Adobe Systems Inc	37.25	-0.75	-2.0
AMSWA	7.81	6.00	American Software Inc.	6.81	-0.38	-5.3
APLX	42.50	10.63	Apollo Inc.	12.13	0.81	6.7
ARSW	82.75	21.00	Arbor Software	34.75	0.00	14.9
ADSK	44.25	16.00	Autodesk Inc.	34.75	0.50	1.5
BGSS	31.75	15.88	BGS Systems Inc.	20.38	0.00	0.0
BMCS	31.88	25.00	BMC Software Inc.	44.88	-3.75	7.6
BOOL	27.50	20.25	Books and Bamboo	20.25	0.00	2.5
BORL	21.25	4.75	Borland Int'l. Inc.	7.88	0.63	8.7
BOBJY	85.00	8.63	Business Objects	11.38	-0.75	-6.1
CAYN	11.50	3.81	Cayenne Software Inc.	5.88	-0.19	-3.6
CNTR	8.75	2.63	Centura Software	4.13	-0.25	0.3
COGNF	39.50	15.75	Cognos Inc	22.75	-1.75	-7.1
CA	91.88	57.00	Computer Associates	58.38	-1.50	-2.1
CVIN	11.25	4.75	Computervision Corp	6.00	-0.63	-9.9
CNSW	68.25	21.75	Consensus Corp	30.75	1.50	5.1
CSRE	52.00	10.75	Corporate Inc.	10.00	0.00	0.0
COSFF	13.88	5.00	Cosmi Corp.	6.00	0.50	2.8
DWTI	5.25	0.00	Datawatch Technologies Inc.	4.75	-0.75	-13.6
FILE	47.00	18.38	Filenet Corp	19.38	0.50	0.0
FRYE	91.75	24.75	Frye Software	31.50	1.50	0.1
FTPS	15.88	8.69	FTP Software Inc.	7.31	0.56	2.0
MUHCF	47.88	41.00	Hughes Supply Comp. Ltd.	30.00	-1.25	-4.0
HYSW	26.38	9.75	Hyperion Software Corp.	20.25	-1.00	-4.7
IDC	16.00	11.50	Information Resources	14.25	-1.13	-7.3
IFMX	36.75	16.88	Informix Corp	17.88	-1.00	-7.2
INGR	18.75	7.75	Intergraph Corp	8.13	0.13	1.6
LEAF	15.25	1.81	Interleaf Inc	2.38	-0.50	-8.6
ISLI	16.00	7.00	Intersolv Inc	8.00	-0.13	-1.5
INTU	58.50	24.75	Intuit Inc.	30.25	-3.63	-12.8
TLC	30.31	5.25	Learning Co. (The)	6.75	-0.25	-2.5
LCWK	22.25	5.25	Logic Works	8.63	-0.00	-0.0
MAPS	16.00	7.50	Mapinfo Corp	9.13	0.13	1.4
MATH	9.25	2.75	MathSoft	4.75	0.50	10.0
MCAF	69.50	21.88	McAfee Associates (N)	80.13	-4.06	-4.8
MENT	18.50	7.88	Mentor Graphics	3.50	-0.38	-3.5
MFGY	21.88	8.88	Mfgy Focus	17.50	0.38	2.2
MGXI	16.00	6.00	Micrognosis Inc. (L)	3.44	0.81	17.8
MSFT	105.50	47.38	Microsoft Corp.	94.88	-3.94	-4.0
ORCL	51.00	18.50	Oracle Corp	30.75	-0.25	-0.6
PMTC	64.25	31.50	Parametric Technology	57.25	-4.00	-6.8
PMRO	14.63	1.00	Parcplace Systems Inc.	1.75	0.38	3.7
PSFT	56.75	25.88	Peoplesoft	39.25	-7.13	-15.2
PTEC	20.25	12.50	Phoenix Technologies	20.25	1.31	0.3
PSQR	10.75	5.25	Platinum Software	20.25	-0.38	-5.1
PLAT	10.75	5.25	Platinum Technology	14.38	-1.75	-10.9
PDCS	24.75	12.13	Progress Software Corp	13.88	1.88	9.3
RMBO	24.25	16.63	Ramapo Technologies Inc.	17.13	-0.25	-1.4
RBSI	30.50	13.13	Red Brick Systems Inc.	20.25	0.13	0.6
SAPE	30.25	20.25	Sapient Corp.	20.25	-3.75	-8.5
SCOC	9.13	5.25	SCO Inc.	7.50	-0.25	-3.4
SBTI	30.25	22.88	Security Dynamics Tech.	29.00	0.00	0.0
SQAI	20.75	17.50	SQA Inc.	20.25	1.31	6.8
SOTA	19.75	16.38	State of the Art	18.00	-0.00	-2.7
SSW	30.88	27.88	Structural Software Inc.	28.25	0.88	0.0
SDRC	47.50	16.88	Sdrc Dynamic Research	21.88	-0.56	-2.5
SYBS	35.13	13.88	Sybase Inc.	16.00	-0.00	-1.6
SYMC	31.50	8.75	Symantec Corp	10.63	-1.25	-7.8
SNPS	50.50	29.00	Synopsys	35.00	1.88	10.0
SMAN	30.25	8.63	System Software Assoc.	30.38	0.13	1.2
SYSF	16.38	9.38	Systemsoft Corp	13.38	-0.38	-2.1
TRUV	0.56	2.44	Truevision Corp.	2.94	0.00	0.0
VIEW	37.88	3.38	Viewlogic Systems	13.38	0.81	5.6
VMRK	12.63	6.00	Vmark Software Inc.	6.00	-0.13	-2.0
WALK	75.81	9.13	Walker Interactive Systems	14.38	1.13	8.5
WALL	27.50	12.25	Wall Data Inc.	18.00	-1.25	-9.5
WANG	30.13	15.38	Wang Laboratories Inc.	21.25	0.25	1.0
NYSE						
AOL	71.25	33.50	America On Line	34.50	-2.56	-8.3
IBM	84.75	75.63	IBM Corp	21.00	-1.00	-4.7
CSRV	30.25	8.63	Computer Sciences Corp.	30.38	-0.69	-2.5
EDFY	35.75	30.13	Edify Corp (L)	30.06	-0.24	-0.5
LCOS	29.81	3.75	Lycos Inc	20.75	0.38	2.0
NETC	30.38	11.88	Netcom On-Line	11.38	-1.75	-9.8
NSCP	75.25	30.75	Netscape Comm. Corp	30.75	-5.38	-14.9
QMKT	30.25	11.88	Open Market Inc.	14.13	-0.88	-4.0
PSIX	19.38	6.75	Psinet	8.88	-0.69	-4.0
QDEX	30.25	8.88	Quarterdeck Corp	6.06	0.00	0.0
RAPT	30.25	12.75	Raptor Systems	16.88	-0.88	-0.0
SCUR	30.25	9.88	Security Computing Corp. (L)	8.88	0.44	5.1
SPYG	30.38	30.25	Spyglass Inc.	31.50	2.00	5.7
YHOO	33.38	25.50	Yahoo! Inc.	31.13	-0.88	-10.1
NASDAQ						
AMD	30.25	20.25	Advanced Micro Devices (N)	25.25	1.38	4.1
ADI	28.25	12.75	Analog Devices Inc.	22.75	-2.00	-8.1
CHPS	30.25	8.13	Chips and Technologies	13.38	0.25	1.8
CRUS	20.25	30.88	Cirrus Logic	20.25	-0.88	-3.0
CY	20.25	8.13	Cypress Semiconductor Corp.	12.75	0.75	6.3
CYRIX	30.25	11.50	Cyrix	20.13	4.56	18.6
INTC	105.88	50.50	Intel Corp	107.31	-0.31	-0.3
LSI	30.63	17.50	LSI Logic Corp.	21.75	-1.50	-6.8
LSCC	34.88	19.75	Lattice Semiconductor (N)	28.13	-2.50	-7.1
MCRL	30.50	12.00	Micrel Semiconductor Inc.	24.13	-1.00	-3.9
MU	30.38	19.38	Micron Technology	20.25	0.38	1.1
MOT	80.75	44.13	Motorola Inc.	50.50	-4.75	-7.8
NSM	27.75	25.00	National Semiconductor	20.25	1.81	5.0
TXN	84.25	30.56	Texas Instruments (N)	78.63	-1.79	-2.2
VLSI	30.25	20.50	VLSI Technology	23.50	1.81	11.3
XLNX	68.75	24.50	Xilinx (N)	58.13	-4.00	-6.0
ZILG	48.38	14.88	Zilog Inc	16.38	-0.38	-1.6
NYSE						
APCC	11.38	5.88	American Power Conversion	21.25	1.88	4.5
ADPT	30.25	11.88	Adaptec Inc.	17.75	-0.63	-1.8
CREK	7.88	1.31	Cabletron Corp	1.38	-0.13	-7.7
CREAF	15.13	3.00	Creative Technology Ltd	15.88	0.88	5.9
DACE	34.50	3.75	Data Race Inc	10.69	-0.13	-0.5
DTM	10.00	6.13	Dataware Corp	6.00	-0.25	-4.0
EMC	38.88	16.50	EMC Corp.	17.00	-0.38	-1.0
EMLX	21.38	0.50	Emulex Corp.	15.88	-0.69	-2.3
ESCC	31.50	16.50	Evans and Sutherland	20.25	1.63	4.0
EXBT	22.75	9.38	Exabyte	11.88	-0.13	-1.6
NSLF	6.33	1.38	Intelligent Info. Systems	1.94	-0.06	-3.1
IQNI	55.13	1.00	Iomega Corp	16.50	0.00	0.0
IPLS	5.81	3.25	IPL Systems Inc.	5.81	0.38	16.7
KMAG	33.50	17.63	Kopin Inc	16.50	-1.88	-5.4
MTSI	20.75	12.25	Micro Touch Systems Inc.	17.00	1.13	6.5
PEAK	27.50	20.25	Peak Technology Group (L)	20.25	0.81	8.1
PMCL	10.75	2.00	Promodel Micro Inc.	6.00	0.31	2.9
AQNI	6.75	3.75	QMS Inc	5.13	-0.25	-4.7
QNTM	30.25	20.25	Quantum Corp. (N)	42.56	2.81	6.3
RNUS	0.88	0.31	Radius Inc	0.31	-0.00	-16.7
SEG	30.25	18.31	Seagate Technology (N)	52.00	0.56	0.5
STK	30.25	20.25	Storage Technology	45.00	-0.00	-1.3
STLC	9.75	0.00	Stratosphere Corp.	0.78	0.19	31.4
TEX	52.25	29.75	Tertronix Inc	49.25	0.13	0.3
WDC	17.25	11.11	Western Digital Corp (N)	12.50	0.00	0.3
XIRC	81.31	41.88	Xircom Corp	57.11	0.56	0.9
AMEX						
AMST	27.13	18.25	Autodesk Multi. Systems	14.75	5.88	-27.5
ANLY	80.00	75.75	Analysis Int'l.	24.50	1.38	4.4
AUD	49.75	30.25	Audio Data Processing	30.25	-0.69	-2.2
BDMI	69.50	37.25	BDM International Inc.	47.50	-0.38	-1.6
CATP	27.25	15.88	Cambridge Tech. Partners	24.38	-1.88	-23.2
CDN	34.88	30.25	Cadmus Corp	29.75	0.88	2.3
CDIO	30.50	30.25	Cordovo Inc.	30.13	0.50	1.6
CMNZ	34.38	18.88	Computer Horizons	46.00	0.75	0.5
CSC	30.25	24.13	Computer Science	71.75	-0.13	-0.2
TSK	41.25	11.63	Computer Task Group	30.88	0.00	0.0
CPU	30.50	3.38	CompUSA Inc.	20.75	1.50	5.1
CDAY	28.81	12.75	Control Data Systems Inc.	14.63	-0.00	-2.2
ECCS	10.00	8.38	Edmund Discount Software	8.00	-0.00	-0.6
ELSI	49.50	40.75	Electronic Data Systems Corp.	45.63	1.38	-2.9
INRC	40.63	14.63	Inacom Corp	24.88	-4.50	-14.3
INEL	11.50	3.75	Intelligent Electronics	3.75	-0.38	0.1
KEA	37.38	11.88	Keane Inc. (N)	30.25	0.75	1.1
MICA	30.00	9.25	Microcap Inc.	13.19	-1.44	-9.8
PAYX	60.88	30.25	Paychex	48.63	-0.00	-0.8
PMS	35.00	30.13	Policy Management Sys.	45.25	-0.50	-1.1
REY	30.63	18.38	Reynolds and Reynolds (N)	30.13	0.38	1.5
SCBI	30.88	14.44	SCB Computer Tech. Inc.	20.25	5.25	1.4
SDIC	30.25	17.75	SEI Corp	23.88	-0.25	1.1
SMED	72.13	30.25	Shared Medical Systems	51.38	2.38	-4.0
SSPE	10.88	30.50	Software Spectrum Inc.	23.00	1.38	4.8
USY	30.75	0.00	Vanstar Corp	16.25	1.50	10.2
SMDT	47.50	31.25	Standard Data Systems	44.38	1.13	2.8

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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New tools support complex 'net sites

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to Internet applications that already exists in client/server and mainframe development tools. They will also streamline the process; they can save companies time and money or allow companies to bring development in-house instead of outsourcing it, analysts said.

For instance, Haht Software, Inc. in Raleigh, N.C., today plans to introduce a version of its HahtSite product. The software lets IS managers and business managers collaborate on building enterprise-spanning Web applications, such as customer service or order entry. The software includes tools for automating links to legacy data stores, including popular client/server applications from SAP AG, PeopleSoft, Inc. and The Baan Co.

Collaboration tools are key elements for complex Web sites that are too large for one person to maintain, said Kenneth Leung, vice president of engineering at the TravelNet unit of Reed Travel Group in Secaucus, N.J.

Collaboration tools are key elements for complex Web sites that are too large for one person to maintain.
– Kenneth Leung, TravelNet

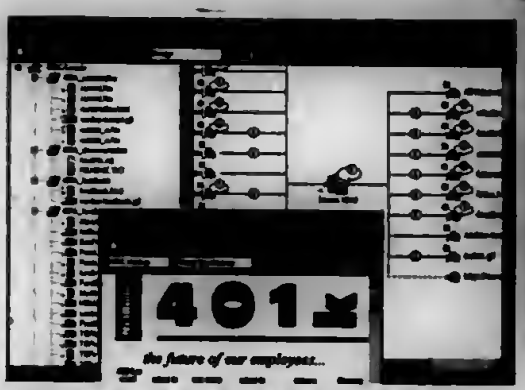
TravelNet is using Haht's software to rewrite a proprietary client/server application used in business-to-business electronic commerce and move it to the Internet. The Windows-based software lets business travelers book trips electronically.

Without HahtSite, TravelNet found it time-consuming to make changes to a site, test the changes and then update the site on the Web, Leung said.

"It was great that we could just push a button and have the site updated and make changes. We didn't need a webmaster to maintain the site — the software did most of it," he said.

Bridgestone/Firestone, Inc. is using HahtSite to build an Internet application that will let users shop for tires on the Web. The site will include a database where shoppers would input a car's make and model to determine what kinds of tires fit. It also will include software to help users find the nearest dealer, said Phil Brown, a software developer at the Nashville-based tire company.

Centura Software Corp. in Menlo Park, Calif., next week plans to announce Version 2.0 of its ForeSite Integration Server. The software was designed as a go-between for Web sites and legacy applications. It gives Web applications easy access to information on mainframes and applications written in common languages and environments such as Visual Basic, PowerBuilder and Delphi. It also includes its own high-performance server for deploying applications to the Web.



Wallop Software's Build-IT, as shown above, was designed to facilitate the construction of large, complex Web sites

DRIVER'S SEAT

Wallop Software, Inc. in Foster City, Calif., earlier this month unveiled a version of its Build-IT collaboration software designed to put IS managers in the driver's seat. A site administrator — generally an IS manager — controls which users can access parts of the application and who can make changes.

Other entrants in this expanding category of software include Mortice Kern Systems, Inc. in Waterloo, Ontario, and Vignette Corp. in Austin, Texas, which recently introduced similar collaboration tools.

Mortice Kern rolled out a collaboration tool set that is controlled via Java applets in a Web browser. Vignette offers a collaboration tool set for online newspapers and magazines. It was designed to allow fine control over a site's look and feel.

Browsing mainframes

CONTINUED FROM PAGE 1

the mainframe applications.

Observers point out that by putting a Web face on mainframe data and applications, companies may be more likely to extend the lives of their mainframe systems.

HANDS FULL

Data center managers are intrigued by the concept, but they also know it won't be an easy process to implement.

"There's an overwhelming requirement to get the security, as well as the right look and feel" if we want to do this, said Dan Kaberon, a mainframe clustering manager at Hewitt Associates, Inc. in Lincolnshire, Ill.

"Users know they have to do this eventually," said Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Boston. "But anything built off of, or deriving data from, the mainframe cannot endanger the legacy system in the slightest."

Even companies that see clear advantages aren't jumping into browser/mainframe connectivity yet.

PCS Health Systems, Inc. in Phoenix, lets insurance companies access mainframe-based patient data via terminal emulation packages it provides to them.

"We'd like to provide this through Web browsers," said Joe Sherbin, a telecommunications consultant at PCS. "Then all the insurance companies would need is a free browser. As a result, there is no cost to them and no inconvenience to us.

"Still, one thing that is sorely needed is the capability to do bi-directional data transfers well" to let users running browsers update mainframe systems, Sherbin added.

Britain's Northampton General Hospital is taking small steps toward Web browser access to its mainframe transaction systems. First, it created a single, Windows-based interface to multiple mainframe applications. This interface simplifies data entry and access for hospital staff.

The Dreyfus Corp. in New York opened up its mainframe CICS trading system to its corporate trading customers by using the same hardware-based security that banks use for wire transfers.

"We went with a controlled group of our high-level institutional investors," said Sri Gupta, manager of application systems. "We block access from the general public because mass consumer market trading over the Web is still shaky."

Dreyfus is using Apertus' Enterprise/Access package to give browsers a direct connection to CICS without going through a time-consuming database staging server.

NEXT WAVE

Users should also be aware of the extra processing load that thousands of new Web-based transactions could bring to the mainframe and the extra storage needs that may result if a company chooses to use thin clients with Web browsers to access corporate applications.

The first wave of use of these products is apparent today in intranets, which can provide a higher level of security and more control over the users' platforms than the Web.

From there, the move to Web browser access to mainframes should flourish much like the move from dumb terminals to PC-based terminal emulation software, analysts noted.

AT&T Universal Card Services lets credit-card holders access mainframe-based account data from Web browsers.

But first the Jacksonville, Fla., company tested the idea on 30,000 employee cardholders internally.

Businesses will depend on mainframe reliability and scalability to manage the complex middleware and data loads involved rather than take the time and money to port their applications to distributed, less manageable client/server systems, said Donald Czubek, president of Gena Ventures, a mainframe consultancy in Saratoga, Calif.

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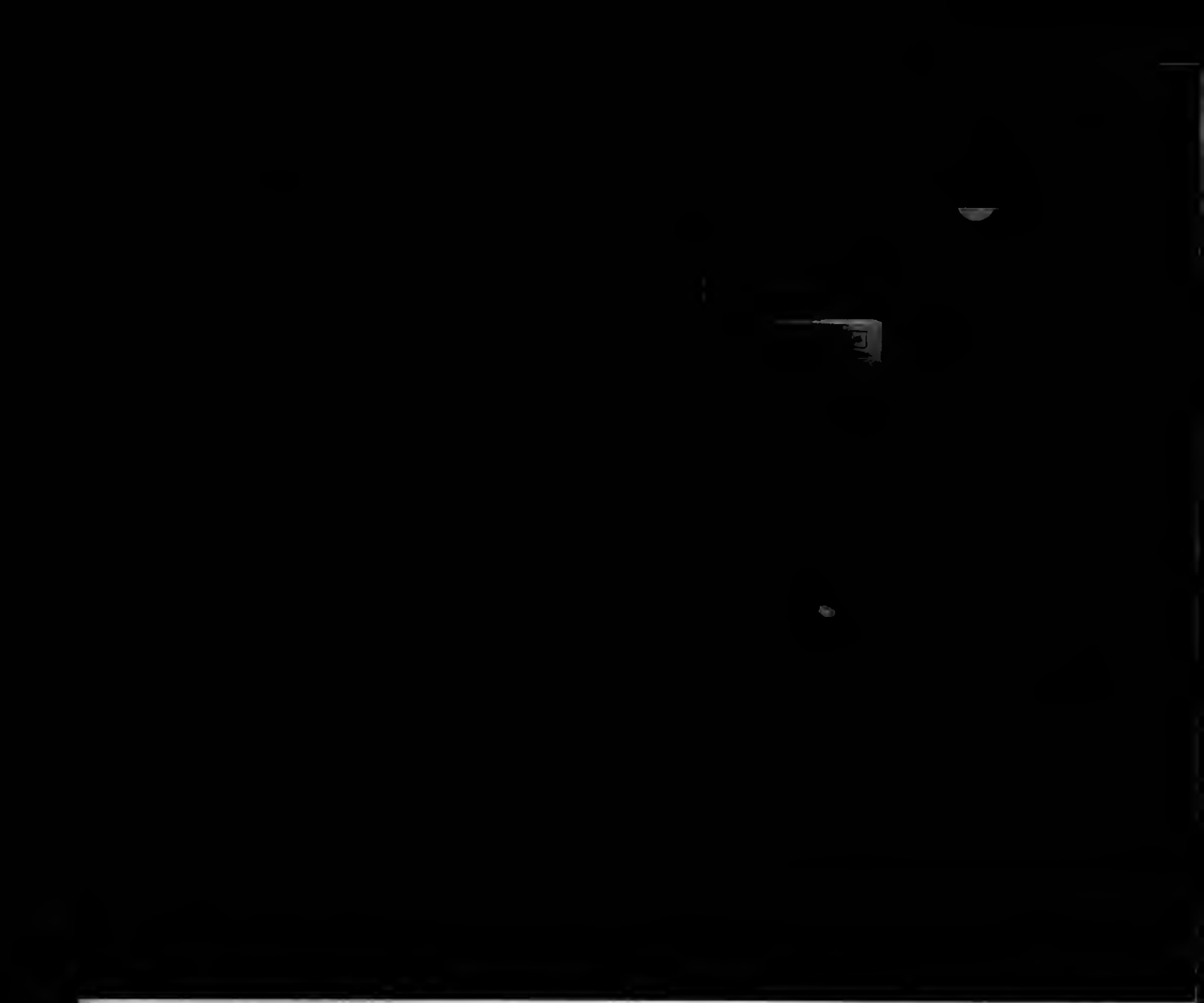

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COMMENTARY

Unmasking Marimba's big marketing push

David Coursey

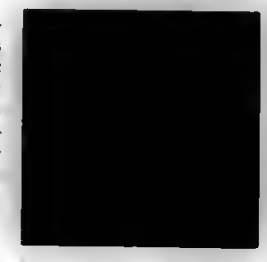
There is a curious human phenomenon that occurs when people don't understand something they think should make sense to them.

Rather than risk looking like dolts in front of their friends, they start to heap praise on the object of their confusion. Get a bunch of such people together and pretty soon everyone *is* jumping sboard — even though nobody has a clue what they're talking about.

The computer industry is filled with examples of this lemming-like, foggy thinking. Previous examples include General Magic, 3DO and the original Apple Newton. The most recent entrant is a company called Marimba, which "everyone" seems to think is "really cool." Nobody can quite explain why, though.

My take on this: Marimba is the newest fashion of the Emperor's New Clothes — which is to say, there's nothing there!

I mention this because Marimba is actively courting the corporate intranet market, looking for companies that need to distribute information to remote locations or customers. My advice, other then to stay sway from Marimba, might be to buy in to "push" technology only if you can justify the cost almost immediately. Over the next few months, prices will come down — there are, after all, more than 20 companies working on push products — and Microsoft or JavaSoft might just decide to build the technology into s future release of their own.



So-called push technology is the market segment of the week. Marimba has built a push spplication, called Castanet, that distributes software and content across the Internet. Install the Castanet "tuner" and your computer will periodically poll Castanet "transmitters" for software updates and new content.

Have I mentioned that Marimba was founded by four members of Sun's Java team? And that it's funded with money from venture capital firm Kleiner Perkins' Java fund? These facts are important because Castanet is the sort of software only s Unix geek could have designed — an unattractive user interface built atop software that makes doing what you want done needlessly complex. But since the firm has the "right" people and the "right" money, Silicon Valley in general and the Java community in particular have gone gaga over Marimba.

Push applications deliver content to user desktops. "Push" implies that the content provider drives the distribution of the data, but it doesn't work that way. PointCast, Castanet and all the others require a desktop client to go to the information provider and request new information. The client downloads the goodies in the background, giving the user the impression that the information is arriving via some sort of broadcast mechanism when all that has really happened is an automated download at a predetermined time. Not quite as impressive as it seems, but effective enough if you don't need real-time data.

At least one push vendor uses s dog-and-newspaper metaphor. But do you suppose people would be as excited about Marimba and the others if the technology was dubbed "fetch?" It's just a small compromise of the truth that push really doesn't push.

So far, I've loaded Castanet onto my desktop twice and removed it within an hour each time. The available content isn't very good, and Marimba has done an excellent job of making the relatively simple concept of content "channels" about as unattractive as possible.

If you want to see channels done better, spend your time with PointCast (www.pointcast.com), InCommon Downtown (www.incommon.com) or even iFusion's Arrive (www.ifusion.com). Then you'll be equipped to visit the Marimba site and, like me, wonder what the fuss is about.

Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

Wanted: Cheap RISC makers

Charles Babcock

The advent of the network computer offers a broad new market for hardware. I'd like to see the RISC chip makers — Sun, Mips Technologies, Digital and IBM/Motorola — leap in and flood the RISC market with cheap CPUs and motherboards, capturing as much of the market as possible.

This isn't likely. The RISC suppliers just aren't used to doing business the way PC manufacturers are. They're used to producing s higher-priced chip that goes into a higher-priced computer. And if they aren't careful, they'll do the same thing with the network computer — they'll produce s more elegant machine than needed. And Intel will walk sway with the crown.

That would be a shame, because the network computer has a potentially different set of priorities than what was designed in the Pentium CPU.

Indeed, Intel is far down the path of building the next Pentium, s more complicated, more feature-rich and more HP-compatible chip. All of which may overlook the faster and simpler needs of the network computer.

So why aren't the RISC chip makers seizing the day? They are in the sense that IBM and Sun are producing their own network computers. Sun's JavaSoft is producing the JavaStation, which has an anticipated price of less than $750.

Great. But that isn't what I mean when I say I want RISC chip makers to flood the market. They have always been so proud of their designer labels that they've seeded few clone makers.

Doing so, of course, tends to cheapen the brand name and undercut the lead manufacturer's prices. But the network computer opens s more hardware-neutral playing field, and the RISC makers must pull out all the stops to avoid conceding the chip market to Intel.

After all, IS managers responded enthusiastically when Compaq and Dell established that they can produce PCs as well as IBM can. Why not unleash the same wide competition among RISC makers instead of keeping them penned in their private preserves? For the IS manager who is buying thousands of desktops at s time, a range of options and choices is s healthy thing.

I say bring on the clone makers — the guys who pack components in to nondescript gray boxes, slap a label on them and sell them for less than $500. If the RISC chips plan to have s life after the next generation of Pentiums, they'll need numbers as well as style.

Sun Microelectronics, the hardware arm of Sun, is sbout to take s giant step in this direction, but I don't see the other RISC suppliers doing so.

Sun Microelectronics is producing SPARC CPU motherboards for clone makers. They were designed to work much like Intel motherboards.

But Sun still must make s leap of faith and cut prices to a level competitive with comparable Pentium CPU boards. The payoff would be a gain in numbers shipped, s corresponding gain in market share and a reduced cost per SPARC unit produced.

The record of clone makers in the SPARC market so far has been s sorry one. I visited what I considered to be the leading SPARC clone maker a year ago — Solbourne Computer, Inc. in Longmont, Colo. I was dismayed to find it had converted itself into an Oracle applications consulting firm.

Sun Microelectronics President Chet Silvestri said his unit is prepared to sell SPARC motherboard designs so other manufacturers can dumb them down to produce cheaper, less feature-rich units.

Now that's the spirit. That approach never hurt Intel.

Babcock is Computerworld's technical editor. His Internet address is charles_babcock @cw.com.

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Patent watch

Recently issued U.S. patents (Patent number, inventor/assignee, date issued)

Plug-in PC card that monitors interruption requests at the BIOS level to prevent damage from virus attacks. If the device notices internal attempts to alter or destroy data, processing is suspended, and the user gets a warning message to decide whether to proceed. (5,598,531, Andrew R. Hill, Jan. 28)

Foam wrist cushion for keyboard users that includes a heating element and vibrators that massage ailing wrists. (5,599,280, Wallace W. Wolden, Feb. 4)

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Source: MicroPatent (www.micropat.com)

Can't get enough Muzak? Download audio files from the Internet and play them on the Lin… Up device from Audio Hi… Cuper…

WEB SITE NERDVANA

United Media has the distinction of running a profitable Web site (www.unitedmedia.com), thanks to Dilbert-mania. Advertising revenue exceeded $1 million, and sales – mostly of books, novelties and "Dilbert Softwear" apparel – soon will top $1 million, too.

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Ultrapractical Web sites

- **Mortgage calculator (www.ibc.wustl.edu/mort.html)**
- **Reference library for webmasters (www.webreference.com)**
- **Car repairs and maintenance (cartalk.com/info/index.html)**

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Percentage of weekday comic strips in *The Washington Post* with Internet addresses:	45%
Percentage of U.S. business travelers who take a computer with them:	62%
Percentage of U.S. homes with a fax machine last year:	11%
Estimated annual property taxes for Bill Gates' new mansion:	$550,000
Percentage of U.S. population that used E-mail last year:	15%
Percentage in 1992:	2%
Number of countries with Internet access:	187
Number of countries with access to Domino's Pizza:	53

Source: Forrester Research, Inc., Cambridge, Mass.; Internet Society, Reston, Va.; Domino's Pizza, Inc., Ann Arbor, Mich.; CLT Research Associates, New York; Decision Analyst, Inc., Arlington, Texas; Upside, San Mateo, Calif.; U.S. Postal Service, San Bruno, Calif.

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Inside Lines

Hancock may lose job in Jobs

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Digital has it … Jobs

A customer on Digital's Info-VAX message map claims he has been getting nice little candy jars from Digital's multivendor services group as part of a promotion touting improved customer service. But, he said, the candy keeps arriving at the wrong times. The candy corn for Halloween didn't show up until two weeks after all the ghosts had gone home. The Christmas-colored m&ms arrived in January, and the cinnamon red-hots on Feb. 18 — four days after Valentine's Day.

Lojack for laptops

To battle notebook theft, a British company has released a tagging device that cripples stolen laptops. The hardware tag from Autographix is fitted to the notebook's motherboard. If the machine is stolen, it can activate a signal that can be tracked remotely. The device also prevents a thief from accessing the notebook's hard disk, and any attempt to remove the device is supposed to make the laptop inoperable. A kit to fit the devices to laptops costs about $150.

With a name like that, it has to be good

X Inside, a developer of software for Unix X Windows environments, changed its name last week to XI Graphics. The company was receiving E-mail and phone requests from people who thought the Denver-based company produced x-rated graphics. "I was continually having to tell people, 'No, it's not what you think,'" said Thomas Roell, the company's president and CTO. That's what happens when you let clever engineers name the company.

Time flies when you're developing software

At least that was the case for client/server application vendor Software 2000 in Hyannis, Mass. With the millennium quickly approaching, the company felt the need to change its name to Infoliant Software, a less date-sensitive moniker. Company officials say the name Software 2000, when chosen in the early 1980s, implied a long-term, forward-thinking commitment to technology development. But now they get calls from people wondering if they can rewrite Cobol code to recognize 01/01/00 as 01/01/2000.

Bring in da noise, bring in da junk

Internet service providers typically ban their customers from sending bulk E-mail. No longer. On March 17, Philadelphia-based Cyber Promotions will allow advertisers and others to send millions of junk E-mail messages for one monthly fee. Call it Spam on Demand — or the St. Patrick's Day Massacre.

There's no escape from Microsoft or Bill Gates. A recent edition of **Entertainment Weekly**, *for example, offered up Bill Gates, the king of silicon, as a replacement for exiting* **Baywatch** *babe Pamela Lee, the queen of silicone. Last week's American Comedy Awards presenter, funnyman David Alan Grier, offered a Shakespearean soliloquy that asked "what light through yonder Windows 95 breaks." Recent episodes of Fox's* **Melrose Place** *featured a geeky software genius with no social skills — referred to on several shows as "the next Bill Gates." Daytime TV viewers, who are used to being peppered with weight-loss ads, now are being promised higher-paying jobs if they take a Windows NT class. And one entertainment TV magazine show conducted a poll to see whose visage should be added to Mt. Rushmore. The answers: Martin Luther King, Oprah Winfrey and, natch, Bill Gates. If Bill Gates has changed your life, contact news editor Patricia Keefe at 508-820-8183 or send E-mail to patricia_keefe@cw.com.*

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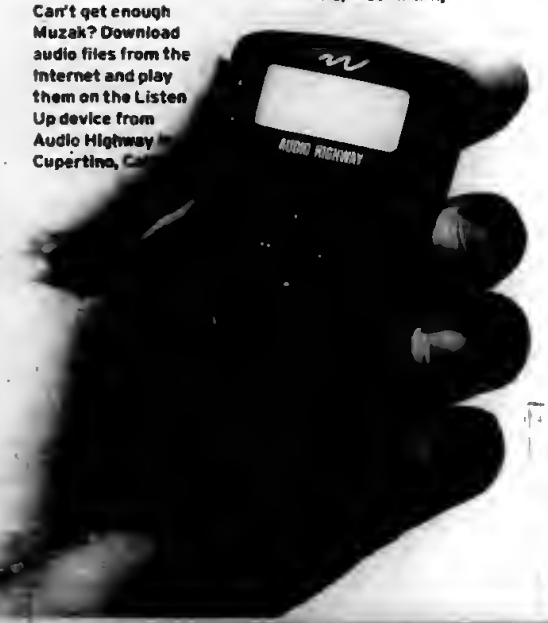

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Sources inside and close to Apple say Ellen Hancock, the executive vice president of Apple's technology office, will soon step down after less than a year at the company. An Apple spokeswoman denied the reports, saying Hancock said she has no plans to leave. But sources claim Hancock is unhappy after being stripped of her chief technology officer title. They added that she has already butted heads with recently returned Apple co-founder Steve Jobs, who they claim will take over Hancock's current position.

Digital has it ... late

A customer on Digital's Info-VAX newsgroup claims he has been getting nice little candy jars from Digital's multivendor services group as part of a promotion touting improved customer service. But, he said, the candy keeps arriving at the wrong time. The candy corn for Halloween didn't show up until two weeks after all the ghouls had gone home. The Christmas-colored mints arrived in January, and the cinnamon red-hots on Feb. 18 — four days after Valentine's Day.

Lojack for laptops

To battle notebook theft, a British company has released a tagging device that cripples stolen laptops. The hardware tag from Accupage is fitted to the notebook's motherboard. If the machine is stolen, it can activate a signal that can be tracked remotely. The device also prevents a thief from accessing the notebook's hard disk, and any attempt to remove the device is supposed to make the laptop inoperable. A kit to fit the devices to laptops costs about $150.

With a name like that, it has to be good

X Inside, a developer of software for Unix X Windows environments, changed its name last week to Xi Graphics. The company was receiving E-mail and phone requests from people who thought the Denver-based company produced more adult-oriented graphics. "I was continually having to tell people, 'No, it's not what you think,'" said Thomas Roell, the company's president and CTO. That's what happens when you let clever engineers name the company.

Time flies when you're developing software

At least that was the case for client/server application vendor Software 2000 in Hyannis, Mass. With the millennium quickly approaching, the company felt the need to change its name to Infinium Software, a less date-sensitive moniker. Company officials say the name Software 2000, when chosen in the early 1980s, implied a long-term, forward-thinking commitment to technology development. But now they get calls from people wondering if they can rewrite Cobol code to recognize 01/01/00 as 01/01/2000.

Bring in da noise, bring in da junk

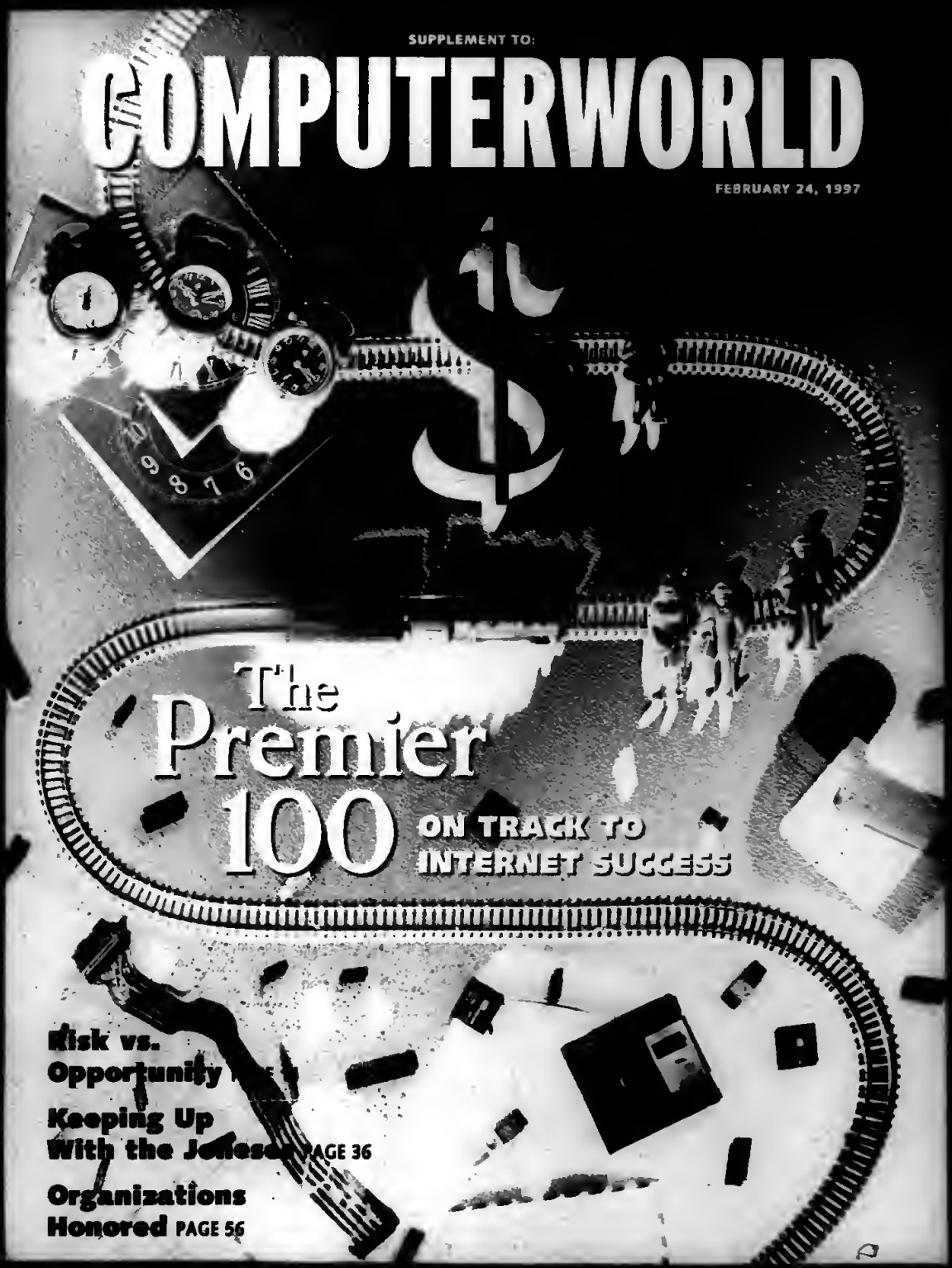
Internet service providers typically ban their customers from sending bulk E-mail. No longer. On March 17, Philadelphia-based Cyber Promotions will allow advertisers and others to send millions of junk E-mail messages for one monthly fee. Call it Spam on Demand — or the St. Patrick's Day Massacre.

There's no escape from Microsoft or Bill Gates. A recent edition of **Entertainment Weekly**, *for example, offered up Bill Gates, the king of silicon, as a replacement for exiting* **Baywatch** *babe Pamela Lee, the queen of silicone. Last week's American Comedy Awards presenter, funnyman David Alan Grier, offered a Shakespearean soliloquy that asked "what light through yonder Windows 95 breaks." Recent episodes of Fox's* **Melrose Place** *featured a geeky software genius with no social skills — referred to on several shows as "the next Bill Gates." Daytime TV viewers, who are used to being peppered with weight-loss ads, now are being promised higher-paying jobs if they take a Windows NT class. And one entertainment TV magazine show conducted a poll to see whose visage should be added to Mt. Rushmore. The answers: Martin Luther King, Oprah Winfrey and, natch, Bill Gates. If Bill Gates has changed your life, contact news editor Patricia Keefe at 508-820-8183 or send E-mail to patricia_keefe@cw.com.*

SUPPLEMENT TO:

COMPUTERWORLD

FEBRUARY 24, 1997



The Premier 100

ON TRACK TO INTERNET SUCCESS

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Keeping Up With the Joneses PAGE 36

Organizations Honored PAGE 56

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Mountain View, CA 94043-1100
415 960-1300

Sun

Saluting Innovation on the Net

A Message from Edward J. Zander
President, Sun Microsystems Computer Company

1997 ushers in another exciting year of opportunity as the Network Age moves forward at its fast pace. And nowhere is the push to new frontiers more in evidence than in those organizations applying Internet-related technology to conduct business in a whole new fashion.

In the following pages of this magazine, published by Computerworld, you'll find 100 of the best and brightest. Companies daily deploying the technology necessary to realize effective business gains through superior application development for their Web sites, for their intranets, and for their commercial traffic on the Internet. They represent true innovative spirit in their use of the technology now available. And they are a source of inspiration to those of us striving to develop and manufacture new products that will continue their push forward.

Sun is again proud to be a part of this salute to innovation by sponsoring the Premier 100 magazine. And we are pleased to have our partners—Informix, Netscape Communications, Oracle, SAP America and Sybase—join us as co-sponsors of the 1997 edition of this special magazine from Computerworld.

We congratulate the organizations Computerworld has placed on its 1997 Premier 100 list and offer best wishes for success in their future endeavors.

Edward J. Zander

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Why is Netscape software the Internet/intranet software of choice for so many Fortune 100 companies? One reason is our single-minded focus on Internet technology and how it can improve business communications.

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SuiteSpot is just one example of how Netscape is providing open Internet technology to better link people and information. To see how we can help your company improve its internal communications, call us toll free at 1-800-397-8607. Or visit our Internet Web site at http://info.netscape.com/pre4

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Generate Web and Client/Server Applications

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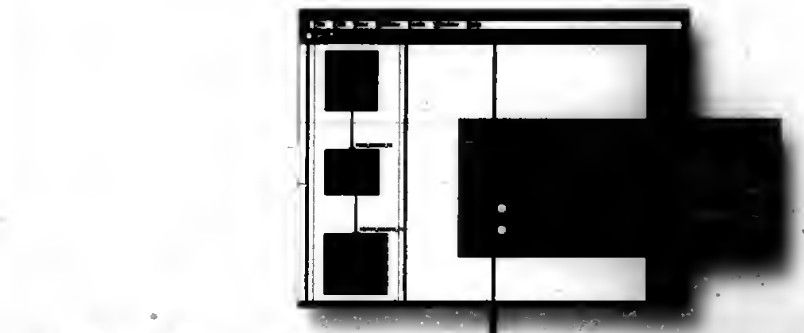
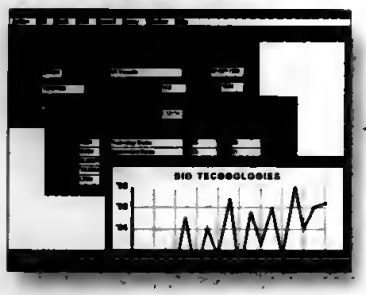
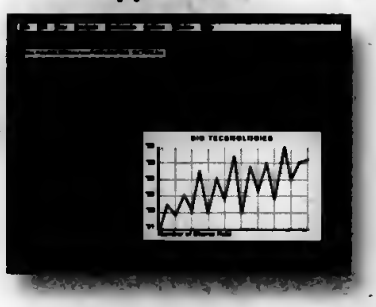


Generate Client/Server Applications



Generate Web Applications



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COMPUTERWORLD

PREMIER 100

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COVER PHOTOGRAPHY David Gas

From the editor

The Premier 100: Internet excellence, at a moment in time

Behold! It's the 1997 edition of *Computerworld's* Premier 100, a publication bold enough to thoroughly dissect the issues confronted and overcome by organizations that are excelling with Internet technologies on both sides of the firewall.

What makes Premier 100 organizations so damn good? They're leveraging the World Wide Web and related technologies in ways that significantly advance their core organizational objectives. That means they're creating lower-cost or more efficient channels of product distribution and service, or they're more effectively sharing critical operational data with suppliers and customers — or with their own far-flung staff. Or, they're creating business opportunity where none existed BTW (before the Web). They've also figured out how to overcome bandwidth and network infrastructure shortcomings and avoid security loopholes and cultural chasms at almost every turn.

We know our list is far from exhaustive. We concede it's purely a snapshot that captures Internet excellence at one point in time (last fall). It does, however, reflect the best practices of organizations that have mastered the first leg of the Internet challenge, a contest not too unlike a marathon. But this race is of indeterminate length and is filled with numerous physical and metaphysical "walls" that must be scaled along the way.

Interestingly, those who lead the initial stages may not be the ones who persevere. With Java and Active X applets, better encryption techniques, certification authorities, EDI and other transaction standards and "push" technologies on the horizon, today's laggards could become next year's contenders (learning curve, 'net bandwidth and processing capacity permitting). Should be interesting to see who leads next year's pack.

Internet: alan_alper@cw.com

Alan Alper

PHOTOGRAPHY BY JACK FOLEY; COLORIZING BY LARRY GOODE

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The intranet. Everyone's talking about it, but few are taking advantage of it. Whether you're talking business-to-business, or business-to-consumer, Sun can show you the opportunities associated with the intranet, and then provide you with the products, service and support to help you implement those solutions. Everything from industry-leading, easy-to-use Netra™ servers and key

intranet
thought intranet was a typo.

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Sun microsystems

EXECUTIVE SUMMARY:

From A to Z

This year's Premier 100 goes beyond the bottom line. A look at our issue.

By Anne McCrory

This year, for the first time, we're not ranking the Premier 100. What? No one gets to tout being No. 1? Or lament being "only" No. 79? Sorry, guys. That's what happens when you change things from the way you've always done them — numerically rating the top 100 users of IT — and go for an all-new look and feel. And you can't talk IT in 1997 and not talk about the Internet, whether it's the global network of networks or the use of its technologies behind the firewall. Ranking is just one of the old rules that don't apply. (We've alphabetized our list instead.)

ILLUSTRATION BY ERIC YANG DESIGN INC

Why? You can't create a ranking system without hard dollar figures, and where Web technologies are concerned, neither revenues nor development costs are clear indicators of an application's business value. Nor can you measure real return on investment, particularly when applications are less than a year old — as most of the Premier 100 apps are. Revenue generation estimates are likely pie-in-the-sky projections for applications that haven't yet earned a dime — or if they have, that can change in a New York minute on the Web (see "So you built it. ... Did they come?" page 30).

Where development is concerned, costs are often hidden in other budgets. End users sometimes design sites themselves. What cost one organization $1,000 — a basic intranet or Web page with simple HTML links — could have more business value than a complicated electronic data interchange (EDI) over-the-Internet order-entry system that's still being used by only a fraction of suppliers and retailers. With costs, value and applications so variable, comparing one project to another becomes impossible.

ON THE OTHER HAND

But that's not bad news. When you don't hold companies' use of emerging technology to a numerical standard, you open the way for looking at what they're really doing. And there are some fascinating applications. Some you've no doubt heard about — for instance, Amazon.com, the online bookstore that *is* the company (no warehouse, no cappuccino bar, no stores). Others may be less well known, such as the service that beams your home photos over the Web to distant relatives, who can order 5x7's from a local participating photo developer that will print them out. But these applications involve no less sophisticated technology and business acumen.

On the intranet side, communi-

The Premier 100

A & M Records amrecords.com
Advanced Marine Enterprises, Inc. www.advmar.com
Alamo Rent A Car, Inc. www.freeways.com
Alaska Airlines, Inc. www.alaska-air.com
Allegany County (Md.) HR Development Commission NA
Aluminum Company of America www.alcoa.com
Amazon.com www.amazon.com
AMP, Inc. connect.amp.com
APL Ltd. www.apl.com
Armstrong World Industries www.armstrong.com
Arthur D. Little, Inc. www.arthurdlittle.com
Ashland, Inc www.ashland.com
Auer Precision Co. NA
BankAmerica Corp. www.bankamerica.com
Barnett Banks, Inc. www.barnett.com
Battelle Pacific Northwest National Laboratory www.pnl.gov
Bechtel Corp. www.bechtel.com
Beth Israel Deaconess Medical Center,
Department of Nuclear Medicine www.bidmc.harvard.edu
Black & Veatch www.bv.com
Booz, Allen & Hamilton, Inc. www.bah.com
Caliber System, Inc. www.calibersys.com
Cambridge, City of www.ci.cambridge.ma.us
C. H. Robinson Co. www.chrobinson.com
CH2M Hill, Inc. www.ch2m.com
Charles Schwab Corp. www.schwab.com
City of Austin Electric Utility Department www.electric.austin.tx.us
Columbia/HCA Healthcare Corp. www.columbia.net
Consolidated Grain and Barge Co. www.cgb.com
Coopers & Lybrand L.L.P. www.colybrand.com
CUC International, Inc. www.cuc.com
DHL Airways, Inc. www.dhl.com
Dreyfus Corp., The www.dreyfus.com
Encyclopaedia Britannica, Inc. www.eb.com
Environmental Protection Agency www.epa.gov
Equitable Cos., The www.equitable.com
Federal Express Corp. www.fedex.com
First Union Corp. www.firstunion.com
Florida Power & Light Co. www.fpl.com
Gas Research Institute www.gri.org
Geisinger Health System www.geisinger.edu
GenCorp rw.gencorp.com
Gould Paper Corp. www.gouldpaper.com
Harris Corp. www.harris.com
Hastings Entertainment, Inc. www.hastings-ent.com
Hearst Foundation www.hearstfdn.org
HBO & Co. www.hbo.com
Heritage Environmental Services, Inc. www.heritage-enviro.com
Holiday Inns, Inc. www.holiday-inn.com
Indianapolis VA Medical Center www.va.gov/station/583.htm
IntelliChoice, Inc. www.intellichoice.com

Continued on next page

cation and distribution are the big winners, in applications that empower all levels of workers, affecting more than the visible bottom line. KeyCorp, for instance, has renamed its executive information system "everyone's information system," now that it's an intranet that 1,000 employees can use to access 40 types of content.

In any case, Internet success is certainly not cut-and-dried. One big surprise? That so few of the best and the brightest are conducting transactions over the Web — just 10% of our list reports using Web technology to perform sales transactions with Internet technology. It's that darn security stuff, isn't it, you're thinking. Well, that's part of it. We called our story "Risk vs. Opportunity." It starts on page 14.

At least you now know you're not "behind" if you don't have online transactions. If you've done anything at all, you're on the right track, because most Premier 100 organizations started small; they Web-enabled some noncritical app, and then the lightbulbs started going off (see "Start small, think infinite," page 24).

OUT OF SITE

Of course, the innovation process might be different if you outsource your whole Web project (see page 48), but outsourcing is a viable option if you don't have the expertise you need on staff. It's another area where the old rules don't apply, too. Premier 100 organizations are outsourcing pieces of the job, then bringing them back in-house and sending them out again — not like the old days, when your name in ink on the dotted line meant one vendor provided you specific services for a set duration of time.

If you do choose to build your site, application or intranet yourself, you'll want to check out the tools the Premier 100 are using and note these organizations' tips for choos-

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The Premier 100

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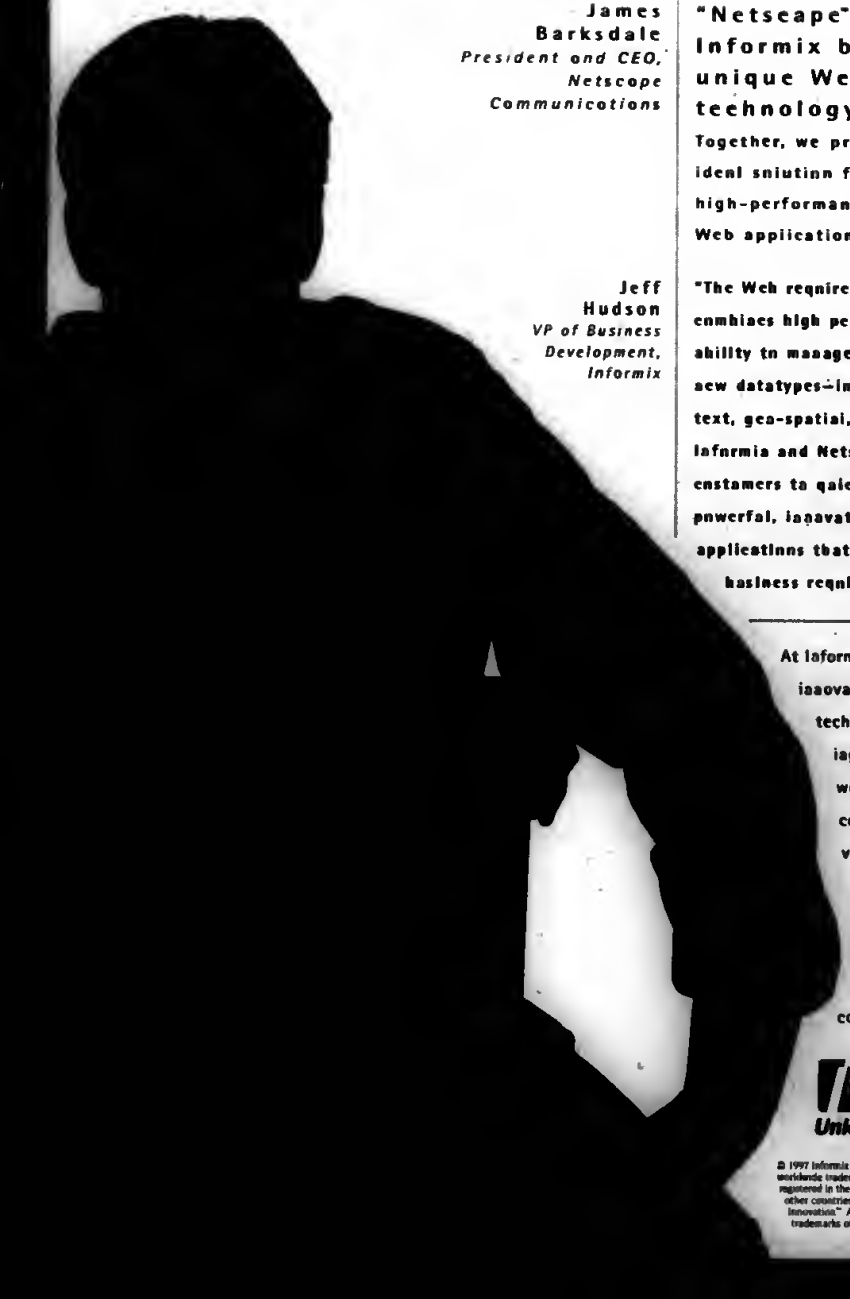
J. B. Hunt Transport Services www.jbhunt.com
Johnson & Higgins www.jh.com
KeyCorp www.keybank.com
KPMG www.kpmg.com
Kraft Foods, Inc. www.kraftfoods.com
Lands' End, Inc. www.landsend.com
Levi Strauss & Co. www.levi.com
Lutheran Church – Missouri Synod www.lcms.org
Marriott International, Inc. www.marriott.com
McDonald's Corp. www.mcdonalds.com
Metropolitan Tickets, Inc. (MetroTix) www.mtix.com
Mobil Corp. www.mobil.com
MovieFone, Inc. www.movielink.com
National Personnel Associates Cooperative, Inc. www.npainc.com
New York Foundation for the Arts www.artswire.org
North American Company for Life & Health Insurance NA
Ourisman Chevrolet and Geo, Inc. www.ourisman.com
Pacific Enterprises/Southern California Gas www.pacent.com
Parker Hannifin Corp., Compumotor Division www.compumotor.com
Peapod www.peapod.com
Pennsylvania State University at DuBois www.ds.psu.edu
Pep Boys – Manny, Moe & Jack www.pepboys.com
PictureVision, Inc. www.photonet.com
Plymouth, Inc. www.plymouth-fun.com
Progressive Corp., The www.auto-insurance.com
Purdue University www.purdue.edu
R. M. Vredenburg & Co. www.vredenburg.com
Rich Products Corp. www.richs.com
Rockwell International Corp. www.rockwell.com
Rolex, Inc. NA
Sabre Interactive www.travelocity.com
Samsung Construction Equipment America Corp. www.scea.com
Saturn Corp. www.saturncars.com
Schnuck Markets, Inc. www.schnucks.com
Seattle, City of www.ci.seattle.wa.us
Sharper Image Corp. www.sharperimage.com
Spiegel, Inc. spiegel.com/spiegel
Superior Electronics Group, Inc. www.cheetahnet.com
TRW, Inc. www.trw.com
United Airlines, Inc. www.ual.com
United Healthcare Corp. NA
United Parcel Service of America, Inc. www.ups.com
U.S. Postal Service www.usps.gov
University of California www.ucla.edu
University of Texas Medical Branch at Galveston www.utmb.edu
University of Texas – Houston Health Science Center www.uth.tmc.edu
Vanderbilt University www.vanderbilt.edu
Wells Fargo & Co. wellsfargo.com
Weyerhaeuser Co. www.weyerhaeuser.com
Whirlpool Corp. www.whirlpool.com

NA=Not available. Some Premier 100 organizations do not have public Web sites and are honored for their Internet/intranet applications.

Netscape's James Barksdale on Informix.



James Barksdale
President and CEO, Netscape Communications

"Netscape partners with Informix because of its unique Web database technology.
Together, we provide customers an ideal solution for next-generation, high-performance, content-rich Web applications."

Jeff Hudson
VP of Business Development, Informix

"The Web requires a database that combines high performance with the ability to manage a wide range of new datatypes—image, video, text, geo-spatial, and more. Informix and Netscape enable customers to quickly develop powerful, innovative Web applications that meet any business requirement."

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ing an Internet service provider ("Beyond HTML," page 51).

Then again, getting your application started is only the beginning. If you have a commercial site, you need to learn how and where to promote it so the visitors come — and come back. In that regard, updating your material and enhancing what you offer on the Web is key. the Premier 100 found. And if you're in a competitive field (and these days, who isn't?) it's a veritable steeplechase to offer new services before your rival — our friends in the package carrier industry speak to that ("Keeping up with the Joneses," page 36).

Base: 53 respondents. Source: Premier 100

And speaking of competition, has anybody recruited your webmaster yet? We asked managers at four Premier 100 companies how they keep their artists cum technician/administrators happy and on the network ("Web wunderkind," page 54). They say project ownership, job satisfaction and flexible working conditions are key. "We're trying to bring developers into a strong partnership with the business, where they actually feel that they own the site," says Gideon Sasson, a senior vice president at Charles Schwab.

But for everyone who makes a living on the Web, there's somebody else who has never fired up a browser and isn't likely to — like the 15 million people in the U.S. who don't even have phone service ("Premier paradox," page 64). Some programs are in place to provide greater access, but they are far from enough. "The fact that the technology is evolving should not deter us from insisting on universal access," says consultant and author Wade Rowland, one of our correspondents.

Still, the world is surprisingly wired these days, with churches, seniors, farmers, artists and agencies serving usually less-enfranchised demographics getting into the act. Even though some of the applications that serve these populations didn't make our 100 list, we included them in "Expect the Unexpected," page 40, as testament to the fact that the site you stumble across may be more interesting than the one you set out to find.

Base: 46 respondents. Source: Premier 100

Regardless of your own business niche — be it corporate America, small business, nonprofit or entrepreneur — our Premier 100 has something for you. The most worthy Web apps, after all, aren't as dependent on funding as on innovation; on huge staffs as on dynamic ones; on sophistication as on the ability to identify a business need and leverage this emerging medium to fill it. Like any new business venture, Internet projects must be constantly re-evaluated — and you must be capable of tweaking, updating and even totally revamping them on short notice. Like the Internet itself, which knows no limits, so too do its applications, inside and outside the firewall, demand attention ad infinitum.

▷ McCRORY IS MANAGING EDITOR OF THE PREMIER 100.

Top industries

The 1997 Premier 100 comprises these industries

Manufacturing	15%
Business services	11%
Retail	8%
Financial services	7%
Education	6%
Transportation	6%
Entertainment	5%
Government	5%
Health care	5%
Insurance	4%
Utilities	3%
Other	25%

Source: Premier 100

How we chose the 100

Selection of this year's Premier 100 began with a survey of 10,000 organizations in more than a dozen industries (excluding computer hardware and software and telecommunications) last fall. Organizations were asked about their Internet and intranet applications — what they were, how much they cost to deploy, how much they cost to maintain, what revenue, if any, the organization expects from the application and what other benefits it has earned, or expects to earn, from the technology.

Computerworld editors then verified the information and evaluated the organizations' projects based on innovation, complexity of application and organizational value. To qualify, the Web sites or other Internet/intranet applications had to have been in general use for at least three months at the time of the survey.

Because the applications and sites are so disparate among industries and even among organizations, and because the technology is so new at many organizations that cost benefits were often only projections at the time of the survey, we chose not to rank the 100 this year. Instead, we offer you a listing of 100 organizations that represent the innovation and evolution of Web technology in the U.S. marketplace.

For more information on the organizations and their applications, see the tables beginning on page 56.

To create one of the most dynamic Web sites, HotWired clicked on Sybase.

There are cool places on the Internet. And then there are truly hot ones—like the HotWired™ Network (www.hotwired.com), serving over two million page views every day. What helps HotWired generate all this heat? Sybase.® We provide the database and Internet **Internet Solutions** solutions that run their site end-to-end. We make it dynamic. Personalized. Different every time you see it. We even help track visitors' browsing habits, so content is automatically updated with each visit. Which is why more of the top Internet sites run on Sybase than any other solution. For a more in-depth look at what we've done for HotWired, visit www.sybase.com/hotwired. Or call us at 1-800-8-SYBASE. It's where the most dynamic Web sites begin.

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ISK vs. OPPOR

By Kathleen Gow

Susan Andreen buys two to three dozen cans of cat food, all different brands and flavors, for her three finicky cats each time she gets her groceries. Not that she has to go to a store — she places her order from her computer with a third-party fulfillment company called Peapod, which takes the order electronically, has it filled at the nearby Jewel Food Store in Chicago and delivers the goods to Andreen's door.

It's a service that benefits the consumer. But what if a cat food maker wanted to know at what price Andreen could be persuaded to change to a single brand of cat food? Or if she would, in fact, be willing to fill out an online survey about her buying preferences in exchange for $5 off her next order?

Peapod can do that, too. Offering such "1-to-1 marketing" was one reason the 7-year-old Evanston, Ill.-based online grocery shopping pioneer added the Internet as an access point (www.peapod.com) to its proprietary dial-up network service last June.

Clients — called sponsors — include companies such as Ralston Purina Co., Kraft Foods, Inc. and Bristol-Myers Squibb Co. They complement a half-dozen grocery store partners, including Jewel Food Stores, and 30,000 consumers from five metropolitan areas in Peapod's growing customer base. The service is expected to reach 100,000 consumers in 12 cities by the end of this year. To order groceries through Peapod, consumers pay a monthly membership fee via credit card, a flat shopping and delivery fee and 5% of the total grocery bill when the goods arrive.

"They're flocking to us," boasts Thomas Parkinson, Peapod's executive vice president and chief technology officer. Parkinson co-founded Peapod with his brother Andrew, knowing, he says, that information on customers' buying habits, as well as the ability to test things such as coupons, would be valuable assets to consumer goods companies. That's why, from the beginning, they started capturing consumer buying patterns in their data warehouse.

AMONG THE FEW

But Peapod, with its array of transaction-oriented Web applications, is a standout among Premier 100 organizations. Our survey results show that the bulk of Web applications, at the end of 1996, involved information sharing, document publishing, electronic mail and customer service; just 10% involved sales transactions. These results are close to 1996 figures from International Data Corp. (IDC) in Framingham, Mass., that estimate that 80% of Fortune 500 companies at year's end had a Web presence (up from 34% in 1995), but only 5% were conducting transactions on the Web.

That's not to say many of these companies eventu-

PHOTOGRAPHY BY MARC BERLOW

The technology's there, but few Web sites conduct transactions.

Are companies' concerns prudent — or keeping them behind the curve?

TUNITY

ally won't do more. Many Fortune 500 companies now have transaction-oriented Web initiatives in pilot phase, says Ullas Naik, vice president of technology research at First Albany Corp., a Boston-based investment firm. "But it will be at least a year-and-a-half to two years before most are offering large-scale transactions," he says.

In Web years, that's a long way off. What gives? Premier 100 organizations list a host of concerns: data security and reliability. Scalability. Lack of infrastructure, common standards and audit trails. The limitations of development tools. A general unfamiliarity with the territory. And an assessment, based on industry competitors and tolerance for adopting leading-edge technologies, as to whether they need to offer Web-based transactions to stay competitive.

"The Gateway 2000s, the Dells, the Netscapes are on the Web doing transactions because their audience is already there," says Frank Gens, senior vice president of research at IDC. "Companies like Wal-Mart are pioneering the development of a broader mass market, but it will take time for that audience to come."

Getting in front of the bandwagon won't necessarily bring extra payoffs, says Victor Wheatman, vice president of electronic commerce at the Gartner Group, Inc. in San Jose, Calif. "Companies have to look at themselves and determine what level of risk and investment they want to take and try not to get caught up in the hoopla and hype."

80%

Source: IDC, 1996

Banks, in particular, are feeling pressured to add Web transactions for competitive, marketing and image reasons. "They don't want to appear stodgy, and they don't want to see cyberbanks coming into their business with less regulatory oversight and overhead," Wheatman says.

But, certainly, companies that don't now have transaction-oriented Web sites should not feel they are behind the curve, Wheatman adds. Analysts agree that we are still in the "early adopter" stage of putting transactions up on the Internet, and that it will take a long time for companies in most industries to migrate their applications, many of which are mission critical.

In fact, while consumer sales took the lead in 1996, by the year 2000, business-to-business sales over the Web will outpace consumer sales about 3-to-1, for a total of $120 billion, according to market research firm Input, based in Mountain View, Calif.

Continued on page 18

PHOTOGRAPHY BY ANDY FREEBERG

It's

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Continued from page 15

Payment and security concerns have been a major barrier to that business-to-business growth — though those factors have hardly been missing on the consumer side. Whenever transactions are permitted, a company risks break-ins to corporate data stores inside the firewall or to customers' credit data if it doesn't implement security correctly. It risks marring or muddying its corporate image if the content, presentation or operation is not up to company or industry standards. And, of course, it risks spending a lot of money for little or no payback.

Some Premier 100 organizations are forging ahead nonetheless, with security a top concern. Such was the case at San Francisco-based Bank of America, a unit of Premier 100 honoree BankAmerica Corp. It moved to make its complete line of online banking services — including bill paying — available over the Internet last summer. One of its primary security moves was to partner with Netscape Communications Corp. to implement its Commerce Server with the Secure Sockets Layer security protocol. "At that time, it was really the only viable solution to do online banking [on the Internet]," says Robert Newton, vice president of interactive banking product development. Today, he adds, there are more options.

The U.S. Postal Service just went live with its first transactional Web application in December. That service, which lets business customers order Express Mail supplies, doesn't require payment (the supplies are free), so the agency is still mulling security methods. But it will need to make a decision as it proceeds with plans to sell stamps from the Web site, among other services.

"Our mission is to proceed in as deliberate and as careful a manner as possible so we don't jeopardize the security of credit card numbers, the

A Calculated Plunge

Does adding transactions to your Web site make sense?

With so much hoopla surrounding business sales opportunities on the World Wide Web and the fear of missing them, how do you decide if it makes sense to plunge into the murky waters of Internet electronic commerce?

You must be able to make a strong business case for adding a transaction-oriented application, the same as you would for adding any business application. "What benefit will you get from the transaction itself? Will it save money? Will it help you *make* money?" — these are the questions to ask, says Victor Wheatman, vice president of electronic commerce at Gartner Group. "If you can answer those questions clearly in the affirmative, then you've probably got something of value. But if not, then it falls into the realm of advanced technology."

You must be able to define your audience and, based on how homogeneous it is, the scope of applications you need to offer, says Pete Stark, manager of corporate information services at the U.S. Postal Service in Washington, D.C. The Web site, for example, must respond not only to consumers, but also to a variety of business customers.

Once your audience is defined, get their feedback. "Ask your customers first if they're interested in doing it, and don't just do it because it's there," says Thomas Parkinson, executive vice president and chief technology officer at Peapod, an online grocery shopping and delivery service based in Evanston, Ill. Make sure what you plan to offer provides true value, Parkinson says, giving customers something they can't get elsewhere or making it easier or faster for them to get it.

A company such as retailer L.L. Bean, Parkinson suggests, may do better sticking to its paper catalog because of the graphically intensive nature of its presentation. (L.L. Bean, nonetheless, enables customers to buy products through its Web site at www.llbean.com.)

Also, conduct market research and collect information about visitors to your Web site. Cambridge, Mass.-based Arthur D. Little, Inc. did just that and determined that, at least for now, its customers are not looking for online transactions. Currently, the consulting firm is giving away brochures and

PHOTOGRAPHY BY KATHERINE LAMBERT

information we're taking or our own network in the process," says Pete Stark, manager of corporate information services at the U.S. Postal Service. It may opt for a system that gives users personal identification numbers rather than requiring them to enter their credit card numbers over the Internet.

MORE ISSUES

Scalability and building an infrastructure to support transactions are other big issues for Premier 100 organizations. Ask one who knows: Peapod. "When you start scaling up, hardware becomes much more sophisticated," says Parkinson, whose company added Hewlett-Packard Co. HP 9000s to handle the volume. The demands on Peapod's system are substantial. "It's more difficult for us than for many online companies because our database [Informix Version 7] gets hit for very large lists while shoppers are searching for items," he says. The average order size is about 50 items.

Infrastructure is what's holding up a full rollout of transactional intranet applications at Bechtel Corp. The engineering and procurement company is piloting two applications on its intranet that will go live as soon as it gets everyone set up with Web browsers, likely by later this year, says Michael Albert, who is chairman of Bechtel's Web advisory board and is based in Houston. One application lets people in the company post job openings; the other provides financial information.

Infrastructure of a different sort — legal, tax and organizational issues among the corporate parent, retail stores and global marketing staff — have kept Levi Strauss & Co. on the transactional drawing board.

The company's Web site was launched in October 1995, and its first transactional application — selling items such as memorabilia and collectibles related to the Levi's brand — is just under consideratioo for 1997, says webmaster Rick Trapp. Besides strategy, the company has to figure out how to handle folfillment aod whether credit card transactions should be processed on-site or outsourced.

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For the Bank of America, offering its

Where the value is

What business value do Premier 100 organizations derive from their Internet apps?

Source: 1997 Premier 100

copies of articles about the company, not selling them. "They want to find information," Ben Zipkin, interactive marketing manager, says about the customers. The company redesigned its Web site this past summer with improved navigation and a lot more content, "but we spent more than half of that [three-month period] thinking what we wanted to accomplish," he says. "Right now, with the state of the Internet and so many issues about how secure electronic commerce is, it's just not something we want to focus our resources on. We've done well building awareness with our site and have gotten enough benefit from that."

That might be enough for your company, too, at least until more third-party tools are available to help you build, secure and track online transactions a year or two down the road. "You don't want to rush out with something that's useless to folks you want to attract, but it would be a waste of time to wait until you get it completely right the first time, because there is no way to do that," says Frank Gens, senior vice president of research at International Data Corp. in Framingham, Mass.

If you've done some serious thinking about the message you want to present and know what you want to offer customers, Gens says, "then it's just as well to get out there, take the lumps and learn some lessons. It's a great opportunity to learn about your customers."

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PHOTOGRAPHY BY MARK ALCAREZ

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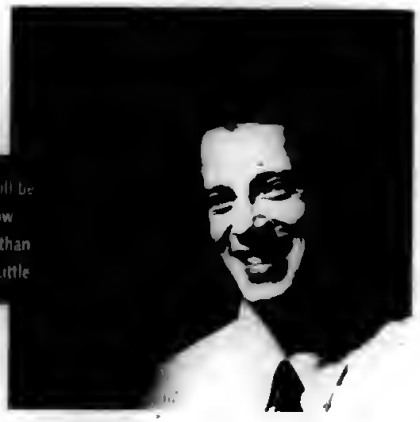
Where the value is

What business value do Premier 100 organizations derive from their Internet apps?

"Maybe a couple years down the line, we will be interested in doing online billing, but for now we'd rather give people things off the Web than sell them things." — Ben Zipkin, Arthur D. Little



PHOTOGRAPH BY [illegible]

Home Banking services over the Internet was a natural extension of its proprietary direct-dial service, which has been in place for more than a decade. It was an option Home Banking customers said they wanted. With that feedback, says Catherine Graeber, senior vice president in the Interactive Banking Division, the bank decided to hedge its bets and build an interface from the bank's direct-dial product to both the Internet and America Online.

Starting with information about its products and services and a few calculator functions, such as figuring out the mortgage amount a home buyer can afford, Bank of America later added E-mail, credit card and loan applications, account access and bill payment. "We've learned a tremendous amount about what attracts [customers] and what doesn't," the bank's Newton says. "Where the issues used to be primarily about security, now they also concern response time and speed."

For Bechtel, using the two transaction-oriented applications in-house is already paying off. "We can quickly get [software] out to everyone without having to load something onto everyone's desktop," Albert says. The financial application also helps employees in offices with little network infrastructure, such as in the Asian Pacific region, dial in to the corporate intranet and access financial data, he says.

Picking up business

Value of goods and services expected to be traded over the Web in 2000

Business-to-business sales	**$120B**
Business-to-consumer sales	**$45B**

Source: Input, 1996

NOT FOR EVERYONE

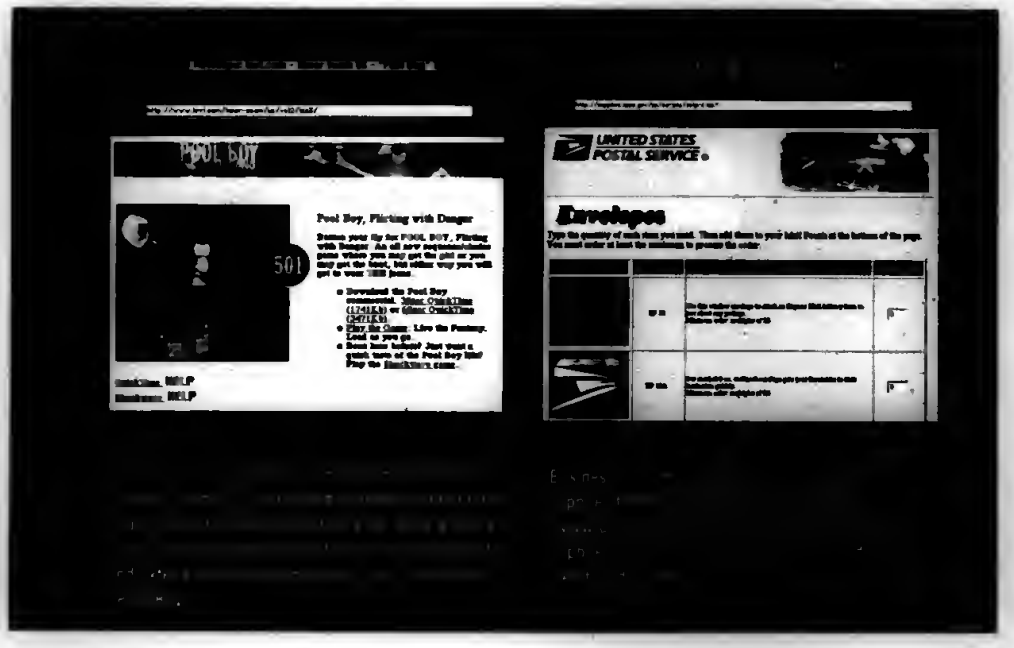
For all the Premier 100 organizations that are offering Web-based transactions and all those held up by various concerns, there are some for whom slow adoption is actually a strategy.

Stark at the U.S. Postal Service, who is just beginning to develop with Java, is being careful not to implement something that the majority of customers — those without the latest versions of Netscape's and Microsoft Corp.'s browsers — can't access.

Levi Strauss espouses a similar approach. "We want technology that is accessible by 90% of our visitors — so either Netscape 2.0 or Internet Explorer 2.1," says Alisa Weiner, the company's senior marketing manager for the Internet.

Cambridge, Mass.-based consulting firm Arthur D. Little, Inc. is quite happy with its recently revamped, and decidedly nontransactional, Web site. "Maybe a couple years down the line, we will be interested in doing online billing," says Ben Zipkin, interactive marketing manager. "But for now, we'd rather *give* people things off the Web than *sell* them things."

▷ GOW IS A FREELANCE WRITER IN MEDFORD, MASS.



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Start Small
Think Infinite

First you used the Web to streamline one of your business functions. Now you know the possibilities, and you're going for broke. By Alice LaPlante

"It's like driving a car at night. You can't see farther than your headlights, but you can make the entire trip that way."

That's what novelist Robert Stone replied when asked how he could write his complex and densely plotted books without using outlines. But Stone, most widely known for his National Book Award winner *Dog Soldiers*, easily could be speaking for technology managers at Premier 100 organizations. How so? Most say they're traveling a surprisingly serendipitous route to online nirvana.

For Dave Krauthamer, manager of information services at Parker Compumotor, realizing the true innovation an intranet enables "came pretty gradually." The manufacturer started out by putting its human resources materials online. Now, the company does everything from qualifying and tracking sales leads to performing real-time quality assurance testing on the intranet. "Now, of course, we can't keep up with all the possibilities," he says.

Like Parker, many Premier 100 organizations embarked on their first intranet/Internet projects because the technology promised a faster, cheaper and better way to do the sorts of things they've always done. But it didn't take long for truly innovative ideas to begin percolating. Here are four companies' stories.

KEEP ON TRUCKIN'

In early 1996, J.B. Hunt Logistics, a division of the Lowell, Ark.-based transportation management firm J.B. Hunt Transport Services, began experimenting with using a home page to communicate with customers and provide them with basic order-tracking capabilities. Easy stuff. It was going so well, in fact, that Tracy Black, Hunt's director of IS, wanted to find other ways to apply the technology.

The opportunity came sooner than anyone expected. Shortly after the initial home page was completed, Hunt landed a contract to manage all of JC Penney Co.'s transportation logistics. Hunt promised to provide the retail giant with a way to check on the status of any shipment in real time — that is, any of the 70,000 truckloads of goods from 500 vendors shipped annually to Penney's warehouses. Here was the tricky part: The capability had to be operational by July 1,

ILLUSTRATION BY DOUG ROSS

1996, when Christmas inventory shipments began rolling in to Penney's distribution centers.

That gave Black and her staff just 60 days to design, build and implement a strategic application that would allow real-time data to flow through the disparate legacy systems of the two companies. "We ran through all the possible technologies we could use and very quickly narrowed our choice down to the Internet," Black says. In six weeks, her team built an application that gives Penney employees access to Hunt's logistics database via the Internet. Total cost: just $30,000.

Payback is visible on all sides. The application has allowed Hunt to manage the Penney account with 15% less personnel than would otherwise have been needed, Black estimates. And Mark Christos, Hunt's director of operations, lauds the benefits of an application that can be easily adjusted to fit other clients' needs. "Customers are tremendously excited about this," he says.

KEY COMMUNICATION

"For us, the 'aha' came a year ago," says John Woodson, vice president of advanced development at KeyCorp, the financial services giant based in Cleveland. Having successfully launched a Web site (www.keybank.com) that provides a comprehensive catalog of KeyCorp consumer products and services — including a "virtual" multimedia tour of a KeyCorp branch — Woodson and Steve Maynard, vice president of Internet services, realized they could apply the same technologies internally.

The problem they decided to tackle: the inefficiencies of what Woodson called the "cascading communication model," where important corporate information was being disseminated when "A told B, and B told C," Woodson says. "We didn't like the fact that getting your hands on the latest information depended on who you knew and how nicely you asked them."

Thus, Keynet — which transformed the company's host-based

Continued on page 26

Answering the call from cellular providers

When Jim Baird was told that his firm had made a contractual commitment to let clients check the status of their multimillion-dollar construction projects online in real time, he took a deep breath and considered his technological options.

There were three possible solutions. "And frankly, the first two scared the daylights out of me," says Baird, network manager for international engineering firm Black & Veatch in Overland Park, Kan.

That was in early 1996, when B&V's telecom division landed juicy deals with a number of telecom giants to manage the construction of tens of thousands of cellular towers to support the new personal communications services (PCS) cellular phone systems for frequencies just licensed from the Federal Communications Commission. As firms rushed to establish new cellular networks, B&V promised its clients it would figure out a way to keep them on top of the day-to-day progress of construction permits, licensing deals and other developments at each site.

Because "the first company to get their towers up can expect to capture a lion's share of the business," speed was essential, Baird says.

He figured there were three ways to give telecom vendors the information they needed. His first thought: traditional client/server. B&V could distribute laptops to the construction managers, who would track the information and regularly dial in to B&V's headquarters to upload the data to a database server there.

B&V's Jim Baird: System lets clients get construction updates via the Internet.

But Baird told B&V managers that the results of attempting this "wouldn't be pretty." "Could we really expect hundreds of people independently to keep local databases current and dial in regularly enough so we could figure out a way to create coherent management reports?" he says.

The second option was to give users in the field dial-in terminal access to a mainframe database utility that would accept direct input about project progress. But Baird thought the costs of installing a modem pool would be prohibitive, and the application's functionality would be limited.

The third solution — using the Internet — turned out to be the charm, Baird says. Since all the client companies were telecom providers, their Internet access was ubiquitous. It didn't matter what hardware or software platforms were used in the field.

And developing the application turned out to be fast and cheap. Using C++, Baird's staff wrote a front-end Web application that allowed any Internet user, after being cleared by security procedures, to call up screens that walked them through relevant questions. That application, which resides on a Sun Microsystems, Inc. SparcStation Web server, then transfers the data back to an Oracle Corp. database residing on a separate Sun SparcStation behind the firewall. "The application on the Web server talks to the database server, so the end users never have direct access to our database," Baird explains. "The good news is that our clients looked at it and said, 'Wow.' The bad news is that they said, 'If you can do this, you can do these 150 other things, right?' "

— Alice LaPlante

PHOTOGRAPHY BY LARRY FLEMING

Continued from page 25

executive information system into what Woodson calls "everyone's information system." The prototype was built in less than a month for just $80, and the production system was up and running a mere 90 days after that. The final cost of the system was nearly $300,000, but that included all the additional servers, hardware and software, and infrastructure upgrades necessary to allow more applications to be layered on top of the network.

Now, more than 1,000 employees have access to 40 different content areas within Keynet. Woodson says the intranet is accruing 50,000 to 60,000 hits per month, and the savings on printing and distribution costs alone cover project expenses. Take the fact that Woodson intends to put all corporate forms online.

"Since people only print off what they need when they need them, we eliminate all the related costs of storing paper: warehousing costs, printing costs, distribution costs," he says. The more efficient flow of information adds value, too.

COMPUMOTOR CONTINUES

The Compumotor Division of Parker Hannifin Corp., an industrial automation manufacturer in Rohnert Park, Calif., didn't set out to cure a major ill, but to save a little money, says Krauthamer, the information services manager. The idea was to eliminate document printing and distribution costs by putting basic HR materials — the policies and procedures handbook, the employee telephone directory and benefits reference manuals, among other things — on an intranet. It took Krauthamer six months and $18,000 to do it; he estimates it's eliminated more than $130,000 in annual document management costs alone.

What cost Parker Compumotor $18,000 to do has already saved the manufacturer $130,000 in document management costs

But that was just the beginning.

Like many other companies, Parker Compumotor supports a number of disparate databases internally. Giving users the ability to piece together these various data sources — legacy databases, SQL databases and data warehouses — using a single front end "greatly enhanced their ability to drill down into important information and slice-and-dice the data as they wished," Krauthamer says.

Next? New territory altogether. Intranet applications currently under development include video and audio aids for workers on the manufacturing assembly line.

And Krauthamer is especially enthused about plans to put up on the intranet assembly-line quality measurements that were captured during defect sampling tests. That will allow Krauthamer to loop the test numbers back to the workers almost immediately, instead of at the end of the month, as it's historically been done.

"The benefits you get from quality testing depend on how quickly you get the results back to the person doing the work," he says.

INFO EXCHANGE

At Southern California Gas Co., the first internal application of Internet technology is called PE Xchng. It facilitates the exchange of dispatches among field-based "competitive intelligence champions" — employees who volunteer, in addition to their regular jobs, to keep an ear to the ground and pass along anything of competitive interest to a manager at headquarters in Los Angeles. That manager, intrigued by an Internet demo given by Heather Copeland, the company's Web development manager, commissioned PE Xchng.

The project took three months to complete. The total cost of $60,000 included new hardware and software that will be used on other intranet applications, Copeland says.

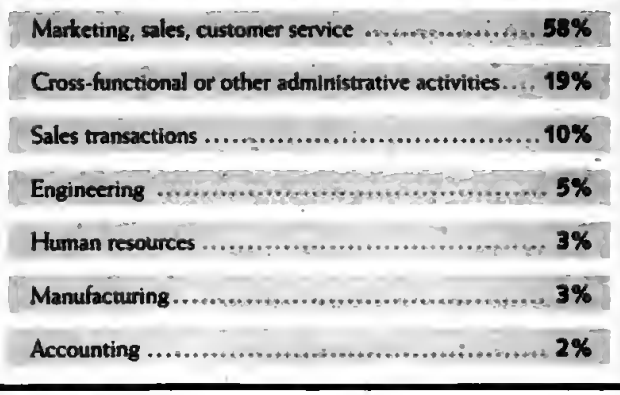
Meanwhile, the intranet idea has caught fire. Other departments are requesting versions of PE Xchng for their own use. And Copeland believes the intranet will eventually become an open forum for all employees to use for enterprisewide communication.

And the benefit of better communication is one that all companies, not just Southern California Gas, can appreciate.

▷ LaPlante is a freelance writer in Woodside, Calif.

Premier 100 applications

What business function does your Internet/intranet application support?



Source: Premier 100 organizations

Web-enabling an app saves $350K

It wasn't that analysts at Pacific Northwest National Laboratory (PNNL) couldn't *eventually* get their hands on vital financial statistics about ongoing laboratory activities.

After all, for years, a mainframe-based application had been churning out end-of-period reports that captured the status of the dozens of environmental and energy-related research projects under way at any given time for the Department of Energy (DOE).

But until a team of technologists and scientists developed a Web-based version of this legacy system, employees routinely faced delays and frustration getting their hands on this basic data.

"Because it was so hard to use the old application, only a few went to the trouble," says Betsy Kennedy, a senior technical specialist who performed testing on the Web version at the Richland, Wash.-based subsidiary of Battelle Memorial Institute — one of nine DOE multiprogram national laboratories located around the country.

Today, the lab's Web Reporting System (WRS) allows any employee to use a Web browser to get information over PNNL's intranet the instant it's processed. Seven preformatted reports capture the most commonly requested data, including the current costs charged to each project; the number of hours spent on each project by individual lab employees; and how actual costs compare to projected costs. Employees can "subscribe" to whichever reports they wish to see on a regular basis. Currently, 2,000 of the 3,000 lab employees do just that. They can also perform ad-hoc queries on the financial database using their browsers.

And just as importantly, the application allows people situated around the globe — whether they're in Portland, Ore., Washington, D.C., or Ukraine — to collaborate on key research projects. This will not only cut costs, but also boost creative synergy for Battelle's worldwide network of scientists, researchers and analysts, says Tom Marr, who spearheaded the project and is manager of business management systems.

Meryl Bim, a PNNL scientist who worked on back-end development of the WRS, uses it as a personal time-management tool, regularly reviewing how many hours she's logged for a particular project and comparing how she's dividing her time among activities. Previously, she had to make requests of individual project managers to get this information.

But the benefits go beyond productivity. Marr estimates that the lab saves $350,000 annually from its port of the host application to the lab's intranet. How? There are savings on mainframe processing fees, and the lab doesn't need to hire data-entry clerks to manually key in data and download reports. Central printing charges and distribution costs are also slashed, as the reports are now sent directly to the users' desktops in electronic form.

The actual cost of the project is harder to quantify. Marr's group first attempted to use a client/server product to do the job, but found that the claims of cross-platform compatibility were seriously overrated. It scrapped that effort — but not before significant dollars and time had been spent.

Tom Marr, front right, assisted by PNNL staffers, developed the Web Reporting System.

With the intranet model, it wasn't all smooth sailing either. "We found we needed to make certain compromises on the user interface," says Wade Erickson, a PNNL scientist who developed the Web interface for the WRS. For example, tasks as simple as using standard desktop cut-and-paste tools to transfer data between on-screen windows were difficult to implement in the Web interface. Bim notes, "We ended up having to do workarounds to get the sorts of features that come standard in PowerBuilder or Visual Basic."

Marr now estimates annual maintenance costs for the application to be about $25,000. Currently, one full-time employee is required to maintain the application; Marr expects this position will drop to half-time within six months.

But new ideas for applying the Internet/intranet technologies are flying thick and fast. "We're more limited by funds than by what's possible," Marr says. "The intranet is going to be a key part of whatever we do here at the lab from now on."

— *Alice LaPlante*

PHOTOGRAPHY BY DAN LAMONT

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So you built it. . . Did they come?

YES. *(The hard part is getting them to come back and buy stuff.)*

By Thomas Hoffman

When The Great American Teddy Bear Co. launched its World Wide Web site last July, it averaged 3,000 hits per week. During the next two months, visitors generated $50,000 in new orders. It looked as if the site (www.vtbear.com), which cost just $2,500 to build, could be a gold mine, says Andy Mager, marketing manager for the Shelburne, Vt.-based teddy bear maker.

But in October, interest suddenly began to dwindle. The chief cause? The site hadn't been updated. "We hit the top of the bell curve," Mager laments.

Like many companies, Great American Teddy Bear had built a Web site, and the visitors had come. The problem was, they didn't come back.

"A lot of people think that if you put it on the Web, then suddenly 10 million people are going to show up and you'll be able to sell anything. That's dead wrong," says Ted Rasch, president and chief webmaster at The Solution Zone, a Westbury, N.Y.-based Web site developer.

So how do you know if and when you've hit a home run? Well, maybe never — it's a continuous process.

"Just because your site was successful last month doesn't mean it will be successful next month or in the future," Rasch says. "You've got to market your site, just like anything else. You can't just sit back."

Premier 100 organizations have figured that out — some of them, the hard way. Others have been more prepared. How? Some have previous online experience. Some vigorously solicit reader feedback and implement changes quickly. Others know their demographics and how to reach their audience; they make sure search engines pick up their site; and they update content and visuals to keep visitors coming back. These are what distinguish the players from the one-hit wonders.

A WELL-READ SITE

Amazon.com, the cyberbookstore that went live in July 1995, decided not to take any chances. It had an extended beta test to make sure it knew what customers wanted up front — and it worked. "We found bugs and rough edges, things that were confusing to our beta customers that weren't obvious to us," says Jeff Bezos, chief executive officer at Amazon.com, whose revenues have grown 34% a month since the site went live.

For example, the company found that the software that ran its site (www.amazon.com) mistakenly allowed customers to order negative quantities of books. That could have wreaked havoc with

Continued on page 32

ILLUSTRATION BY KURT VARGO

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Continued from page 30

the company's inventory database.

The beta test, which allowed customers to give feedback via electronic mail, also resulted in direct service enhancements.

Users asked, for example, for an additional shipping option; originally, the options were standard shipping, which is inexpensive but takes anywhere from two to 12 weeks, and two-day service, which costs $42 for two books. Now the company offers a two- to three-week delivery service that costs $19 for two books.

Joshua Tretakoff of The Sharper Image hopes Internet-based sales make up 25% of the gadget retailer's sales by 2000. "The key is treating the Internet as part of your business instead of a whole new media," he says.

E-mail "is such an easy medium to say what you think," Bezos says. "If you're in a restaurant, you're very unlikely to walk into the kitchen and tell the chef you don't like the food. But you might be more willing to do that with E-mail."

HEAD START

Companies with previous online experience may have a leg up on those who are new to the Internet. CUC International runs NetMarket: The Shoppers Advantage (www.netmarket.com), one of the largest shopping services on the Internet with a database of 250,000 consumer products from jock straps to washing machines. The first incarnation of Shoppers Advantage was launched in 1978 on CompuServe and Quantum, the predecessor of America Online, Inc. The Internet version came out in August 1995.

"We've been around for a while and made our mistakes and learned what we needed to do here," says Rick Fernandes, executive vice president of interactive services at CUC.

In all, CUC has attracted 300,000 members, who pay a $50 annual fee for access to merchandise at cut-rate prices. The membership fees are where CUC makes its money — its portion of the products' prices just covers the cost of the transactions. "It's going to be tough for start-ups [on the 'net] to succeed" if they aren't growing fast enough to justify their infrastructure costs, Fernandes warns.

Yet some start-ups are succeeding. PictureVision, Inc. in Sterling, Va., working with photo retailers, offers a service called PhotoNet (www.photonet.com) that lets customers have their pictures scanned and uploaded to a Web site. Then, friends and relatives anywhere can view them and order copies, which are printed and available at local photo stores.

Using this process, a new grandpa in Chicago ordered an 8-by-10-inch glossy of his newborn grandchild in Atlanta and picked up the picture later the same day. That transaction went through Wolf Camera and Video, Inc., an Atlanta-based retailer with 280 outlets that is one of the half-dozen retailers that offer, or soon will offer, the service. "It was so cool — we beat FedEx," gushes Cliff Whitney, Wolf Camera's director of digital imaging development.

Wolf Camera, which has offered the service since last February, pays 2% of its receipts to PictureVision and now has 4,000 active members, Whitney says. That's about 150 rolls of film a day — a scant 0.5% of all its film business. But Whitney says Wolf Camera expected to break even on the online investment in 1996 and go into the black this year, since its investment in PhotoNet is limited to scanning equipment and people to run it.

NIGHT VISION

Having a product line that meshes with the key demographics of Internet users gives some companies an immediate advantage. The Sharper Image Corp., which sells a line of 1,200 innovative gadgets, such as night-vision binoculars, to the predominantly male 28- to 40-year-old crowd, has seen its online sales double nearly every month since it launched its site (www.sharperimage.com) in October 1994.

How? By letting its customers "dictate where we're going," says Joshua Tretakoff, manager of alternative media.

That direction comes from the roughly 300 E-mail messages the retailer receives each day from customers. When they ask for more outdoor electronic devices like binocu-

the URLs

THE GREAT AMERICAN TEDDY BEAR CO.:
www.vtbear.com

AMAZON.COM:
www.amazon.com

CUC INTERNATIONAL:
www.cuc.com

PICTUREVISION:
www.photonet.com

THE SHARPER IMAGE:
www.sharperimage.com

PHOTOGRAPHY BY CINDY CHARLES

lars, they get them: The firm added the item to its site last May.

The Sharper Image, which had more than $200 million in sales in 1995, hopes Internet-based sales will make up 25% of its total volume by the year 2000. "The key is treating the Internet as a part of your business instead of a whole new media," Tretakoff says.

Of course, not every site can sustain its initial momentum – but it's never too late to reinvent your offering.

In mid-November, Great American Teddy Bear unveiled a redesigned site sporting a new logo, new financial information and new products, such as National Football League-licensed items that weren't previously promoted on the site. The compaoy also plans to advertise in magazines that appeal to 18- to 54-year-old men — the primary demographic for one of the company's busiest holidays, Valentine's Day.

Mager is optimistic. "We probably should have done a little more research before we launched, but we're moving forward," he says. "I see great potential over the next five years."

▷ HOFFMAN IS A COMPUTERWORLD SENIOR EDITOR.

Utne Reader refocuses the Lens

Scaled-down magazine Web site, with new Cafe Utne, is more popular than ever

When Utne Reader launched a Webzine, the Utne Lens, in July 1995, the decision looked like a no-brainer. The biweekly online magazine complemented the alternative-culture bimonthly print product with fresh news and opinion pieces on hip topics like the body, mind and spirit – articles that were edgy for young, online readers.

The site (www.utne.com) drew rave reviews. Advertising dollars started to pour in. General Motors Corp.'s Saturn division bought a three-month spot for $60,000. The Minneapolis-based publisher's $500,000 online investment was starting to pay off.

The site amassed 25,000 hits in August 1995. Then, the same number in September. And October. Then, suddenly, the Lens didn't look so sharp. With newsprint costs skyrocketing, Utne Reader, an outfit with small cash reserves, was forced to revamp the Lens. With a six-person staff, the Lens "was a liability" to Utne Reader, says Griff Wigley, new media manager at Utne.

Since the site revamp, Griff Wigley is targeting readers who don't subscribe to Utne Reader in print.

In late October 1995, the Lens' staff was reduced to two people and its 1996 budget was slashed to $140,000, including salaries. That's when Wigley decided to "refocus the Lens." Instead of running a content Web site that served Utne's print readers, the publisher decided to try and reach new readers who weren't subscribing to the print version.

That month, Utne Reader revamped the site with Cafe Utne, a collection of 45 newsgroups. People can enter the site and participate in chat groups on topics including film, literature, parenting, relationships and Generation X. To make sure the conversations keep flowing and don't become combative, the newsgroups are monitored by moderators, who are paid a flat fee of $50 per month for each one they oversee.

To support the newsgroups, Utne Reader installed a Web conferencing system called Motet, which allows visitors to engage in interactive discussions.

Since the Cafe was launched, the site's popularity has soared to 80,000 hits per month as measured by Internet Profiles Corp., a San Francisco-based Web auditor (not to be confused with AC Nielsen I/Pro, a competing auditor).

Cafe Utne members don't have to pay to participate, but the company has used some innovative approaches to entice them. For $36 a year, members receive a year's subscription to Utne Reader (regularly $18), a CD-ROM and access to members-only conferences. There are now about 200 paid members.

Utne plans to offer an online payment service through which members can pay $3 a month via Cybercash or another electronic commerce outfit, according to Wigley. For now, members can call in or E-mail their credit card numbers.

"We feel like we've learned a lot," Wigley says, adding that he expects the site to become profitable by the end of the year.

— Thomas Hoffman

PHOTOGRAPHY BY MARK LUINENBURG

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Keeping up with the

BY NATALIE ENGLER

In November 1994, Federal Express Corp. introduced Web-based package tracking services, and the race was on.

A month later, United Parcel Service of America, Inc. got its World Wide Web page up; by May 1995, it offered a package tracking feature, too. In July 1995, DHL Airways, Inc., trailing but not out of the running, joined the Web fray.

It was, and is, a high-stakes game of leapfrog, where the ante is innovation and today's leader could be lapped tomorrow.

In the package delivery industry, tracking wasn't enough for long. Web-based shipping services, a drop box locator and a cost calculator quickly followed. And new features continue to be added.

Keeping up with the competition, whether it's aptly named FedEx CIO Dennis Jones or the aggressor in any industry — or even just the technical and use demands of a moving target — is one thing Premier 100 organizations are good at. It ain't easy. It means introducing new features every three to six months; adding, removing and revising content daily; fixing broken links; and keeping track of which competitors are working on what. Nor is it cheap. But those are the hurdles our Premier 100 organizations are clearing.

"With a Web site, you are never done," says Josh Bernoff, a senior analyst at Cambridge, Mass.-based Forrester Research, Inc. Maintaining one is no longer about creating splashy pages, he says, "It's about devising a process that allows you to continue to deliver information without going crazy." That process, he estimates, consumes 20% to 25% of Web site budgets.

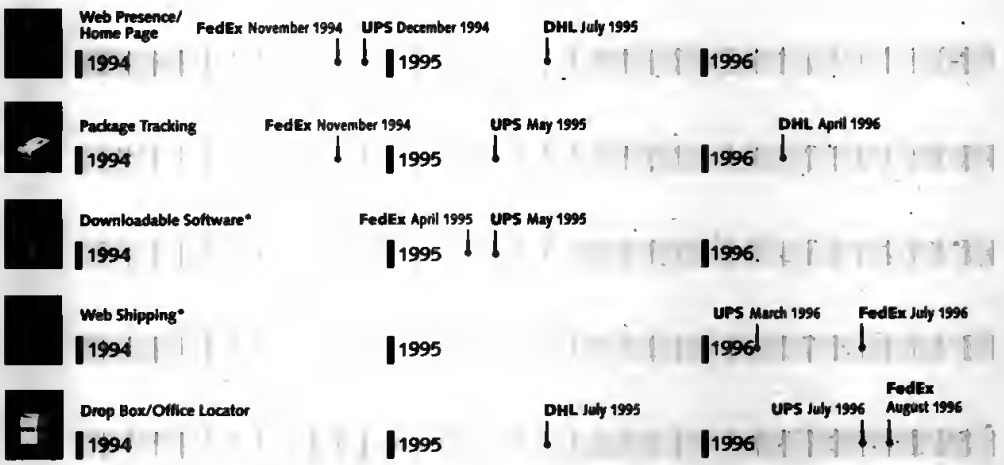
STARTING OVER

Bernoff's assertion doesn't surprise Alan Boehme, DHL's director of customer access and logistics. His company is looking at a $500,000 to $800,000 relaunch of its Web site to equip it for future growth.

Customers use the site to track shipments worldwide and to receive regularly updated news about the network's operations. Unfortunately, like many Web pioneers, DHL structured its site as a collection of

Web Site Milestones in the Package Carrier Industry

FedEx leads the pack in rolling out new features, but UPS and DHL are keeping pace.

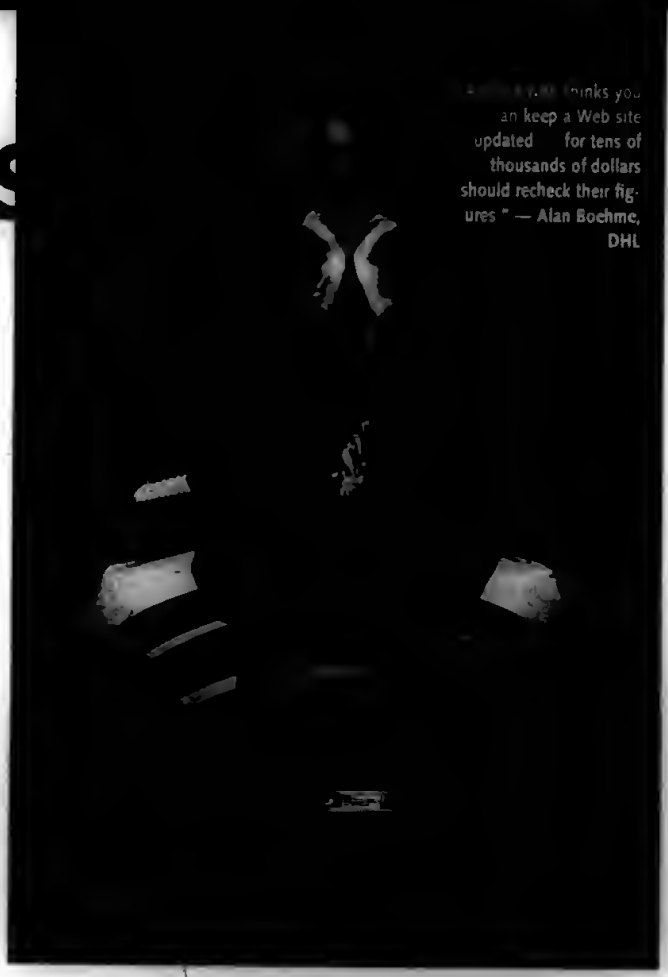


Source: FedEx, UPS, and DHL. In addition to the above, UPS has offered a cost calculator since February 1996, and FedEx began offering online account registration in October 1996.
*DHL does not offer some services because its core business is international; it will consider offering them when it can make the services available internationally

INFOGRAPHIC BY DIXON ROWE

Joneses

Getting your site up is just the beginning. Keeping in step with your competitors — and just the technology itself — keeps the pressure on. Just ask FedEx CIO Dennis Jones.



"Anyone who thinks you can keep a Web site updated for tens of thousands of dollars should recheck their figures." — Alan Boehme, DHL

hard-coded HTML pages instead of creating what Forrester calls a "dynamically generated site," in which each page is constructed based on information in a database. That means changes, such as introducing a new location or reacting to the Australian phone company's addition of a digit to every telephone number, create a "maintenance nightmare." Boehme estimates that maintaining, improving and extending the site costs DHL $150,000 a year — not including hardware.

Now, the company is in the process of "changing everything," Boehme says: the home page, linked pages, navigation and all the links to legacy systems (except for the back-end tracking system, which hits databases in Brussels, Singapore and San Francisco simultaneously and offers a 1½ second response time).

The goal is to allow the 227 countries in the DHL network to build, maintain and support their own services and be able to convey up-to-the minute information regarding specific world events — such as a recent truck drivers' strike in Greece — that may impact transit time. Right now, the company makes that information available via phone or fax. "The Web is the next logical extension to that," Boehme says.

MISSION-CRITICAL APPROACH

The challenge of Web refinement, maintenance and upkeep goes beyond the package delivery industry, especially for advertising-laden sites such as those of Nation's Restaurant News and Columbia/HCA Healthcare Corp. (More on those in a moment.) But for DHL, FedEx and UPS, the task involves treating the Web "just like any other mission-critical system," says Winn Stephenson, vice president of network computing at FedEx.

FedEx's Web site, which receives an average of 26,000 tracking requests a day, is so well integrated into the company's core processes, Stephenson says, that it is impossible to isolate the time and expense involved in keeping it updated. The process involves people from across the 220,000-employee organization. An electronic commerce marketing group designs and structures the Web pages. A data protection group handles security. Project managers develop new applications. People from the legal and public relations departments oversee content. And six full-time and three part-time systems people manage the

PHOTOGRAPHY BY ALAN LEVENSON

site 24 hours a day, seven days a week.

UPS is also formalizing its Web site process. In its "third phase" of site management, it created a full-time team of a few dozen people who are responsible for Web operations, says Tom Hoffman, UPS' public network access development manager, who heads the team.

Maintaining mission-critical applications on a Web site is more intense than maintaining the other applications up there. When FedEx's and UPS' sites receive their frequent updates and significant enhancements, the companies often have to write and test software and synchronize it with all the other applications.

Such changes also introduce the enormous challenge of determining priorities. FedEx analyzes various pieces of information, such as customer feedback — it codes and subcodes each electronic-mail suggestion and conducts online and telephone market research — as well as bottom-line impact, says webmaster Nancy Raileanu.

Competition certainly isn't restricted to the package carrier industry. In August 1995, Columbia/HCA Healthcare transformed its site from an online brochure to a health-care information resource, with more than 3,000 pages of content. True, at that time, it was the only service of its kind. But today, as hospitals and companies outside the health care arena get 'net-savvy, "trying to maintain our lead becomes more time-consuming," says Tod Fetherling, director of interactive marketing.

Fetherling manages the site with five other marketing employees and two IS people. The team spends more than 40 hours a week scoping out rivals and tracking what's on their own site. But he says that maintaining Columbia/HCA's site costs less than $200,000 per year — well below the industry average for a site its size. (The average is between $300,000 and $1 million, according to a 1996 AdAge NetMarketing report.) Fetherling attributes the efficiency to in-house management of the site.

the URLs

FEDEX: www.fedex.com

UPS: www.ups.com

DHL: www.dhl.com

NATION'S RESTAURANT NEWS: www.nrn.com

COLUMBIA/HCA HEALTHCARE: www.columbia.net

DIGESTIBLE INFORMATION

Even those without a "Jones" feel the pressure. Take Nation's Restaurant News (NRN), a 6-month-old New York-based online publication that targets the 120,000 food service operators estimated to have Internet access. Currently, says Will Rodgers, project director, it has no direct competition — other than itself.

"We start looking for news every morning and don't stop until that night," Rodgers says, noting that the staff updates news and financial information twice a day. Other areas of the 1,138-page site, such as information on cutting-edge restaurant architecture and designers, receive weekly updates. "The ambition is to become the trade CNN of the world someday," he says.

Like Columbia/HCA's site, NRN's is supported by advertising revenues. But managing and tracking these ads creates an additional burden for the staff. To help, NRN recently began using AdServer, distributed software from NetGravity, Inc. that remembers which ads have been scheduled for the most popular pages. That speeds the rate at which ads are posted.

Implementing the software, which enables sites to generate online performance reports for each advertiser, required a significant investment. (AdServer costs $25,000 to $200,000, depending on site configuration.) It also involved training four people to install and use it.

But Rodgers says it's worth it. "It has been helpful in keeping us off the wall with a big chart."

Weighing the investment required in a Web application is sound advice. "Anyone who thinks you can slap up a Web site and keep it updated and provide good business-to-business communication for tens of thousands of dollars," DHL's Boehme says, "should recheck their figures."

▷ ENGLER IS A FREELANCE WRITER IN CAMBRIDGE, MASS.

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EXPECT THE UNEXPECTED

Web sites are de rigueur in corporate America, but the medium's not just for the mainstream. A Web site for farmers? You bet. A site for online stargazers? Yes, indeed. Enter a parallel world.

MISSION municipal

BY STEVE ALEXANDER

From the flashy to the functional, the Web sites of Seattle, Cambridge reflect each city's persona

The cities of Cambridge, Mass., and Seattle are 3,000 miles apart in distance and $487,000 apart in what they spend yearly to maintain their Web sites. But the difference isn't just dollars — it's philosophy.

Elaborate graphics and Chamber of Commerce-like features characterize the Seattle site, whereas Cambridge's site reflects an interest in grassroots democracy. "We're trying to get visitors into the city, but it's more important to us to serve the people who are already here," a Cambridge IS official says.

Seattle's Web site (www.ci.seattle.wa.us) uses a mountain of varied content and flashy graphics in an effort to woo business, encourage tourism and help citizens deal with government. A "Seattle Virtual Tour" lets you see and hear the city: In Pike Place Market, the oldest continually operating farmers' market in the country, you can see great piles of seafood on ice while hearing a seller yell "$3.99 a pound!" When you see people walk along the Seattle waterfront, you can hear the cries of seagulls.

In addition, citizens and prospective citizens can get information on everything from choosing a neighborhood to getting electric service started. Businesses can find out how to secure necessary permits to build and to do business with the city.

Started in January 1995, the site costs $500,000 a year to operate, says Jeffrey Crist, technical and creative director of the city of Seattle's Public Access Network.

"The most innovative part of our site is really just the sheer amount of information we've got up there," Crist says. "We have more information online than any other municipality near our size."

The site uses one gigabyte of data, which includes 2,100 Web pages, 10 searchable databases of city information, a few sound clips and more than 3,000 graphics files (photos, maps, diagrams and Web navigation icons). In a nod to the city's Pacific Rim neighbors, a regional overview is offered in 10 languages. And the site continues to expand; this year, citizens will be able to pay parking tickets

the sites

CITY OF CAMBRIDGE
www.ci.cambridge.ma.us

CITY OF SEATTLE PUBLIC ACCESS NETWORK
www.ci.seattle.wa.us

Serve as virtual city halls and tourist kiosks, allowing access to government information.

Todd Marinoff and Valerie Roman praise the practicality of Cambridge's Web site.

PHOTOGRAPHY BY MARK ALCAREZ

Seattle's Jeffrey Crist: "The most innovative part of our site is the sheer amount of information we've got up."

online with a credit card.

If Seattle's Web site is indicative of the city's capitalist, new money reputation, Cambridge's reflects that city's socialist bent. The site (www.ci.cambridge.ma.us) maintains a tight focus on promoting citizen participation in government, avoids commercialism and costs $13,000 a year to operate.

The Cambridge site was started to reduce the number of phone calls city employees had to handle and to make it easier for residents to deal with city hall. It offers information on every city department, maps to help people find government buildings and tips on which buses to take to get there. There's also a bulletin board of upcoming meetings and events and an electronic-mail facility for corresponding with city officials. The site is visited by more than 1,000 people daily, although exact numbers are hard to pinpoint.

"There's a high rate of citizen participation in government here, and people in the city felt the Web site was another avenue to aid and abet that," says Todd Marinoff, city MIS manager. "Cambridge has about 70 boards and commissions, and, eventually, we'd like to get a list of all those meetings online."

Marinoff proudly cites an incident in which a resident complained through Web site E-mail that the electronic checkout scanners in a local store were inaccurate. An investigation found a 35% error rate in scanning and made news in *The Boston Globe*. In another case, an E-mail complaint by a local woman resulted in better lit city bridges for nighttime jogging.

Valerie Roman, Cambridge's MIS director, says bringing out that kind of citizen participation is more important than putting up flashy graphics. The site even has a guiding principle: noncommercialism. Site officials try to restrict the site's information to city or nonprofit events, Roman says. Even tourism isn't a top priority. "These are real-life uses of this technology vs. the snazzy features," she says. And for those who know Cambridge, that doesn't come as much of a surprise.

▷ Alexander is a freelance writer in Edina, Minn.

A HEALTHY hit

BY WENDY MARX

Recovering addicts find support on Hazelden site

When he gets home from his night job, Jim, a 39-year-old recovering alcoholic and drug user, doesn't even take off his coat before sitting down in front of his computer for his daily dose of "spiritual medicine."

For Jim, an airline mechanic in Dallas who has been sober and drug-free since 1993, a morning isn't complete until he visits the Web site of the Hazelden Foundation (www.hazelden.org), the Center City, Minn.-based nonprofit organization that has been helping people with chemical dependencies and related problems since 1949. "I kind of feel I let someone down and I let myself down if I miss a day," he says. "I can't tell you how great this site is. It gives me the chance to meet other people all over the country who share the same experience I have."

the site

HAZELDEN FOUNDATION
www.hazelden.org

Site offers "Thought for the Day," chat rooms and the ability to buy books and other addiction recovery aids.

This is self-help for the 1990s, where the cure isn't bottled or injected but transmitted electronically over the Internet. Since January 1996, Hazelden, which has more than 100,000 alumni of its treatment programs nationwide, has been extending an electronic lifeline to people in need. In September, it made its site more interactive, adding chat rooms and electronic commerce so people can order from its 1,000-item catalog of books, videos, audiotapes and other recovery-related products. Recently, it began distributing a biweekly newsletter to 2,000 registered site users. And it began offering free cyber greeting cards, built with

Continued on page 44

PHOTOGRAPHY BY REX REYSTEDT

Reve
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4

Soon, your net profits could include Internet profits.

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WANTED: retirees

Builder seeks residents for senior communities via Web site

BY WENDY MARX

Why would a senior community advertise on the Internet? Because the community's developer is expanding rapidly, and more and more seniors — like the rest of the population — are getting wired.

Thirty percent of Americans age 55 and older own a computer, with 25% of them using it to communicate online, according to a 1995 survey by SeniorNet, a San Francisco-based nonprofit organization working to build a community of seniors online.

That community includes Leroy Haslup, 76, who corresponds with his college-age grandchildren via E-mail. Haslup already lives in one of the areas that Senior Campus Living, a private firm that has developed and managed senior communities since 1983, is promoting on the Web (www.sclrc.com). The site, which went up last April, describes the facilities and includes campus maps and apartment floor plans. Five communities are expected to be available by early this year: Cantonsville (where Haslup lives) and Parkville, Md.; Dearborn, Mich.; Springfield, Va.; and Pinton Falls, N.J. The Baltimore-based company plans to spend $3 billion building new campuses throughout the U.S. during the next 10 years.

Some 1,500 people have visited Senior Campus Living's site since its inception, but response in terms of leads and sales has been just a trickle, says Tom Mann, director of advertising, publications and graphics. "It's the beginning of the game," Mann says. "We're trying to learn the rules so, hopefully, we'll be up to speed when the Internet becomes a real force."

the site

SENIOR LIVING
www.sclrc.com
Offers preview of retirement communities.

Mann says the company isn't looking for a return on its site investment for a few years. "At a certain point, we'll measure it constantly," he says. "For now, we want to stay on top of where the technology's going and how consumers are shopping." The site was developed internally at a cost of less than $10,000, says systems analyst Song Pak.

Mann says the Web site also appeals to seniors' families, who typically make the housing decisions if the senior needs help with daily care (called assisted living) or nursing care. Senior Campus Living offers both types of facilities, as well as independent apartment living.

Typically located on 100 acres and geared toward the middle class, the facilities offer interconnected buildings housing a bank, beauty shop, convenience store, health club, computer center and other amenities. Some 9,000 senior citizens call them home. "It's a way to just enjoy life, period," Haslup says.

▷ Marx is a freelance writer in Stamford, Conn.

Continued from page 41

Allaire Corp.'s Cold Fusion software, to send to friends and families of people in recovery.

By the end of last year, the site had received an estimated 49,000 visitors, the vast majority of whom had not had contact with any of Hazelden's facilities. That's "great news," says webmaster Linda Peterson. Hazelden doesn't collect demographics on site visitors but believes it's reaching a wider audience than the middle-class population typically served by its treatment centers, which require insurance or private payment.

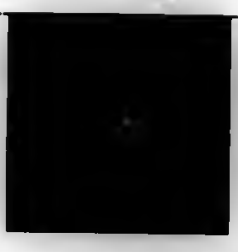
Hazelden spent about $50,000 initially to develop its Web site, according to Barbara English-Belanger, vice president of new ventures. The site, created as an outreach rather than a revenue vehicle, has already returned its investment costs from sales at the online bookstore and referrals to its treatment services.

Meanwhile, for many people, the site is a virtual helping hand. As one person said in an E-mail note to the site, "Thanks to your Web site, I have some confidence in moving forward. ... One comes away with the feeling that Hazelden really does care and wants to help."

IT'S ALL IN THE stars

BY STEVE ALEXANDER

NASA site offers 400 views for space explorers



the site

NASA photojournal. jpl.nasa.gov

A photo archive searchable by voyage or place, this site links to a site featuring 3-D animations of scientific data, such as computer-generated flights over Mars or Venus.

It's a stormy day on Jupiter. White flecks of what appear to be thunderheads — the type of clouds that create thunderstorms on Earth — are swirling around the edges of Jupiter's Great Red Spot. The Red Spot, a 300-year-old hurricane-like storm with winds of 250 miles per hour, is so big the entire Earth could be dropped inside of it.

Welcome to space in cyberspace, where high-quality photos of unearthly beauty take the place of textbooks and newspaper reports. The dramatic view of Jupiter, taken last June 26, is one of the nearly 400 images on NASA's Planetary Photojournal Web site. The site is expected to help reduce the 300 requests per week that a two-person public information office receives.

"We've organized it so you can do searches for all photos returned from a particular spacecraft or for a specific target like Jupiter," says Myche McAuley, a technical staff member at Jet Propulsion Laboratory's science data processing systems section in Pasadena, Calif.

THE price IS RIGHT

Donated services make Web site a smart venture for Goodwill Industries BY WILLIAM SPAIN

If cybersurfing and 50-cent shirts appear an unlikely combination, you haven't asked webmaster Scott Mearns about Goodwill Industries International, Inc.'s Web site.

Public awareness is as crucial for a nonprofit as for any other organization, and Goodwill is leveraging the Web to promote itself and provide easy access to information.

Looking for a Goodwill drop box where you can donate last year's fashions or that couch that won't fit up the stairs? Try the clickable map of the U.S. and Canada to find the nearest donation center or retail outlet — it's one of the site's most popular features, Mearns says.

Curious about Goodwill's history and mission to provide job training and placement for disabled people and others with barriers to employment? You'll find that on the site, too, along with information on how to locate and support your local Goodwill chapter. Each chapter operates independently under a national umbrella; about 20 of the 200-plus chapters internationally have their own home pages so far. Goodwill Industries of Kentucky in Louisville is one of them.

the site

GOODWILL www.goodwill.org

Offers information and donation drop-box locations for the job training and placement agency best known for collecting and selling clothes and home goods

"We constructed our Web page after visiting everybody else's sites," says Oliver Hofmann, the chapter's development director. His site offers information on Goodwill locations, volunteer opportunities and even an approximate price list for goods in local Goodwill stores. The services to build and maintain the site were donated by friends and relatives of the staff.

Future plans for the corporate site include adding RealAudio and developing a private section where Goodwill members can share information, Mearns says. Goodwill may also do some online promotion with CEO and President Fred Grandy, a former GOP congressman from Iowa and one-time crew member of TV's *The Love Boat*.

Of course, for that, they may need to go back to Gopher.

▷ Spain is a freelance writer in Chicago.

ILLUSTRATION BY STEVEN SALERNO

VESSEL FOR evangelism

BY CANDEE WILDE

Lutheran Church spreads its mission on the Web and uses the medium for church business, too

For evangelical Christians whose fundamental doctrine requires them to expose as many people as possible to their beliefs, the Internet is truly a godsend.

The primary reason the Lutheran Church – Missouri Synod put op a Web site a year ago was to reach outsiders — those who aren't familiar with the Lutheran Church, says Joseph D. Sullivan, mission partnership and involvement Internet application coordinator.

the site

LUTHERAN CHURCH
www.lcms.org

Provides introduction to Lutheran faith, daily prayers, database of radio broadcasts, links to churches worldwide. Intranet replaces proprietary network for church business

The Missouri Synod, based in St. Louis, is a branch of the Lutheran Church, which has 6,300 congregations and 2.6 million members in 50 nations. Its Web site (www.lcms.org) receives more than 1,500 hits a day — though the church isn't tracking from whom — and it is also used by the organization's professional workers, congregations and more than 2,100 schools to communicate about church business.

But the primary purpose of the Web site is to spread the Gospel.

"Who We Are" and "What We Believe" buttons on the home page bring up information that provides an introduction to the Lutheran faith. "The home page also makes Bible studies available for people in remote areas or for people who travel," says Tom Butz, assistant to the president, business administration.

Sullivan says he expects more churches to offer Web sites as they allocate more resources to technology. Already, more than 3,000 Christian churches in 75 denominations have Web sites, and that number increases weekly, according to Christianity Today, Inc. (www.christianity.net).

Technology has become so important to the Lutheran Church – Missouri Synod that the group has a staff of 50 IS employees nationwide and a 10-year strategic plan for IT. As for the Internet, it is slowly replacing the church's private "Luthernet" application, which will be phased out over the next year or two, Butz says.

▷ Wilde is a freelance writer in Easton, Conn.

FINE arts

BY WILLIAM SPAIN

Artists embrace Web medium as outreach tool

"Cogniculpture" might not have made it to the Louvre — yet — but aficionados can grapple with it at www.artswire.org. With links to everything from home pages on painting, photography, sculpture, music and dance to news about the latest gallery openings — and a private forum for Arts Wire board meetings and grant application reviews — the Web site facilitates communication among artists, arts organizations and the public.

Its greatest beneficiary, according to Dan Martin, director of the master of arts management program at Carnegie Mellon University in Pittsburgh, may be the local arts organizations.

"They see it as giving them a competitive edge," he says. "Arts Wire and the Web can give them access to people they wouldn't otherwise have."

A NEW crop

Farmers mix technology and tradition to increase profitability

BY CANDEE WILDE

Daryl Drake farms 900 acres near Brookville, Ind., that have been in his family for three generations. He lives in the house his grandfather built in 1920 and still owns the tractor his grandfather purchased in 1936 to replace plow horses. Drake also owns a computer that provides his link to the Internet.

"The greatest advances in farming 'technology' first came with mechanization. Next was biological [advancement] that led to higher yielding varieties [of crops] and chemical weed control. Now, there are electronic advances," says Drake, who has used a computer to help run his farm since 1979. These days, sending and receiving E-mail and downloading information from the Internet are the PC's primary functions. "Farming is like any other business: accurate, up-to-date information is critical," Drake says.

the site

CONSOLIDATED GRAIN
www.cgb.com

Tracks prices of grain and other crops; provides updates on weather conditions, transportation and political events around the world

One company that hopes to leverage farmers' use of technology is Consolidated Grain and Barge Co. (CGB), which markets and transports farmers' bulk crops. Its Web site (www.cgb.com), launched in June, allows farmers to track prices of grain, corn and soybeans, for example, and access information about local harvests. The company hopes that sharing this information, which used to be closely guarded, will sow goodwill with farmers.

"Now, we want to take information to our customers on a trust basis so we can change the adversarial relationship that existed in the past," explains Tim Wesbey, CGB's divisional general manager. The Louisiana-based company operates more than 65 grain facilities in the U.S.

Drake says he isn't sure a Web site can build trust, but he does value the information he finds on CGB's site. "CGB has included both futures and cash bids on their site, which I will visit two or three times weekly — every day if I didn't have other information retrieval methods," he says.

Farmers have always needed current information about prices, weather and transportation conditions and political happenings, and CGB traditionally provided it by phone or newsletter, Wesbey says. But the Internet allows farmers to tune in anytime.

As more family farms are consolidated and the number of farmers continues to decline, computer networks are helping breathe new life into the farming business, Drake says. "With fewer farmers, there are fewer suppliers, less agricultural radio and even fewer government offices," Drake says. "Often, business is done electronically today instead of person to person."

And for artists, who often become very specialized and may work only in one medium, Arts Wire has assigned itself a broader purview. "One of the hallmarks is that we are not specific-discipline-oriented," says Arts Wire director Joe Matuzak.

Key to success is improving the Internet skills of all involved. "We didn't aim ourselves at the technically savvy artists. A lot of our time has been spent hand-holding people through this process."

A program of the New York Foundation for the Arts, Arts Wire was conceived in the late 1980s to improve communication in the arts community via the then-nascent online medium. It debuted in 1993.

It is funded by corporate subscribers and various grants, and some income is derived from providing members with inexpensive Web design services, conferences and workshops, Matuzak says. Server space is provided free by Martin's master's program at Carnegie Mellon. The site also functions as an applied research project for arts management students there.

the site

N.Y. FOUNDATION FOR THE ARTS
www.artswire.org

Provides information ranging from local dance performance schedules to grants available to artists.

ILLUSTRATIONS BY STEVEN SALERNO

Build *or* Buy?

WHETHER YOU YOUR STAFF'S

When Marriott International, Inc. decided to go on the Web, it didn't think twice about turning to contractors to build its site.

Why not do it in-house? "We try to look for core competencies, and managing a Web site is not one of them," says Bill Schallenberg, manager of Internet services.

When it comes to the development, operation and maintenance of Web sites, information managers and their business management cohorts at some Premier 100 organizations are finding that outsourcing is the way to go. Like other technologies before it, the Internet creates a build/buy conundrum, whether to do it yourself or pay someone else to depends on how much control you want to have, where your staff's strengths are and how much you want to spend.

"You can do it all yourself, but it's getting pretty complicated," says Sherry Sumits, an outsourcing analyst at Input, a Mountain View, Calif.-based market research firm. "The more value that's involved, the more risk you have of spending more in-house rather than leveraging economies of scale."

Perhaps more than any other technological outsourcing project in the past, today's Web site development entails cross-disciplinary skills, such as creative design, graphics and writing. Furthermore, the requisite computer skills such as HTML, Java and Common Gateway Interface (CGI) programming are new, and when legacy links are involved, they can get a little dicey.

Then there's the challenge of laying out information in a versatile, electronic page-linking format, which allows for approaches not possible, or even thought of, on two-dimensional paper.

FILLING THE VOID

Stepping in to meet these challenges are Web site "boutiques," whose only line of business is to create sites. There are also traditional ad agencies, traditional outsourcers and systems integrators, for when the Web site requires links to a finely tuned back end. As Forrester Research, Inc. analyst Josh Bernoff notes, if your Web site is part of a larger business-process remapping, "you don't hand it all over to [site developer] Digital Planet and ask them to re-engineer your business."

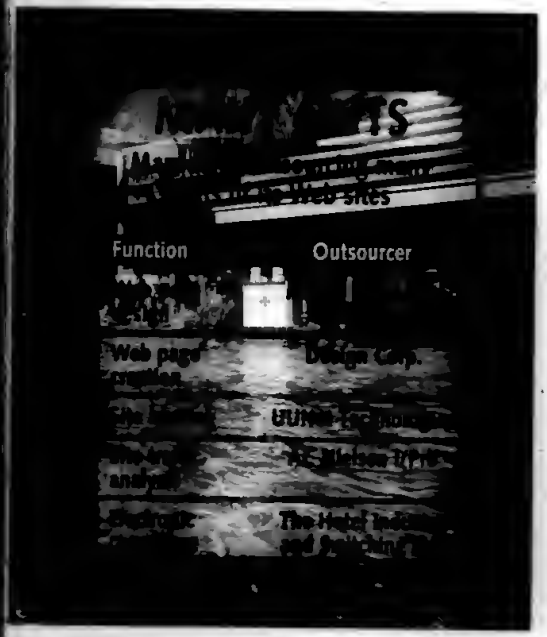
Certainly, plenty of companies are buying in. Estimates of market size vary wildly. Forrester predicts a $10 billion market in site design by the year 2000. Input doubles the ante for that time frame, estimating a $20 billion market that includes Web site hosting and back-end integration.

A Web contract can cost from $1,000 to $100,000, depending on site sophistication, Input's Sumits notes. Yearly maintenance might range from $10,000 to $50,000, she says. But with all the skills needed to set up and maintain a site, the price can be worth it.

Schallenberg won't say how much money Marriott is spending on its Web contractors — all five of them. It's using Waldorf, Md.-based Design Corp. for page creation; Martin Interactive, a division of ad agency The Martin Agency, Inc., for page design and page links; UUNet Technologies,

CREATE AND MANAGE YOUR WEB SITE OR SEEK OUTSIDE HELP DEPENDS ON STRENGTHS, THE CONTROL YOU WANT AND YOUR BUDGET

BY MARK HALPER



Inc. for Web site hosting; AC Nielsen I/Pro for site traffic analysis; and The Hotel Industry and Switching Co. for electronic commerce — processing room reservations and payments.

Though Schallenberg says Marriott factors in core competencies when deciding whether to do a project in-house, that's not always the deciding factor. Strategists at Progressive Insurance Co. in Mayfield, Ohio, decided to build their own Web site because they wanted control, they wanted to learn and they wanted to make changes quickly at the right time, says IS manager Ryan Conlon. The site has been up since the spring of 1995.

"We decided to do it on our own to force ourselves to learn this new technology," Conlon says. "If someone else does it, it's hard to understand the real challenges: what works, what doesn't work, what's hard, what's easy, and what the real capabilities are."

As a rapidly growing auto insurance company vying for market share against the likes of Allstate Insurance Co., Nationwide Mutual Insurance Co. and State Farm Mutual Automobile Insurance Co., Progressive has some ambitious Internet-related goals that include electronic commerce.

Certainly, Conlon's has been a learning experience. For instance, the company has learned to limit the size of images. "We've learned that people will wait about 17 seconds, and then they'll say, 'The hell with this' and go on to another site," he says.

KEEPING OPTIONS OPEN

Of course, nothing has to be forever. The conventional wisdom in data center outsourcing that it's difficult to terminate a deal or change outsourcers doesn't ring true for Web development.

McDonald's Corp. recently decided to bring page development in-house, ending a year-long relationship with San Francisco-based Organic Online. The site offers information about the fast food company, goods to buy and some interactive games for children. "When we originally started, the Internet was fairly new," recalls McDonald's webmaster Judy Newby. "We didn't have a lot of experience."

In fact, the limiting factor in taking on development itself was not the technical challenge, but the chore of managing production schedules across departments. "The programming is the least of it," says Newby, who, like many webmasters, points out that HTML programming is relatively easy, and that plenty of tools circumvent HTML.

Aetna, Inc. also took page development back from its original designer, Proxicom, Inc. — but it doesn't rule out going back to an outsourcer. Creed Terry, an Aetna vice president, says the company will seek out a contractor for an upcoming major redesign.

There's always the mercurial question of where the Web is heading, too. "If the Web should collapse, we don't want to be saddled with a huge overhead," Marriott's Schallenberg says.

▷ HALPER IS A FREELANCE WRITER IN SAN FRANCISCO.

INFOGRAPHIC BY DAVID WAUGH

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Standards-Based Distributed Search & Indexing	Yes	No	Only Vine Application
Server-Based Java & JavaScript	Yes	No	No
Native Support For Oracle, Sybase, Informix, & ODBC	Yes	ODBC Only	ODBC Only
Cost w/1,000 Clients	$$$,$$$	$$$,$$$	$$$,$$$

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Beyond html

Sophisticated Web sites require heavy-duty tools. The good news: You may already have them.

By Suruchi Mohan

"Right now, [companies are] repurposing existing tools." — Chuck Campbell, senior computer analyst and webmaster, Amoco

Creating a basic Web presence with gobs of informational text and flashy eye candy is easy — that's why there are so many alluring sites in the 'net's naked city.

However, a good many Premier 100 organizations are heeding a higher calling. They are transforming product catalogs into full-service order-entry and fulfillment systems; using Internet mail to catalyze customer service and support; or providing customers and suppliers with entree into previously forbidden inventory, production and sales and marketing systems via private intranets.

The good news is, many organizations already have experience with the tools needed to get the job done. "The beauty of the [Web] is that it leverages existing databases, existing tools, existing operating systems and existing hardware technologies," says Richard Finkelstein, president of Performance Computing, Inc. in Chicago.

Chuck Campbell, senior computer analyst and a webmaster for Amoco Corp., agrees. "Right now, [companies are] repurposing existing tools."

For instance, page authoring, image rendering and manipulation aids are coming from Adobe Systems, Inc. and Microsoft Corp. For underlying logic, application developers are turning to Web-enabled visual programming tools from companies such as Microsoft or to Web-spawned startups such as Bluestone, Inc. and Netscape Communications Corp. They are also using proven Internet derived shareware products and languages such as C, C++, Perl and CGI, the latter two of which were developed for the Internet.

Using a sprinkling of these is Moses Haile, a systems developer at National Personnel Associates Cooperative, Inc. in Kentwood, Mich. Composed of nearly 400 placement firms, the organization maintains a database of job seekers and job openings. Users go through a Web browser to a Web server — WebSite Professional from O'Reilly & Associates, Inc. — that also hosts a Microsoft Access database. Haile used CGI and WinCGI scripting for database access.

Black & Veatch, an engineering construction company based in Kansas City, Mo., took a different approach. Using a new breed of tool, it built a construction management application that allows managers and clients to check the status of projects (see story page 25).

The architecture is typical three-tier client/server enabled for the Web. At the browser layer, managers just run a predefined report, which goes to the Web server. The server, using Bluestone's Sapphire/Web, generates an SQL query that goes to the database for the information requested. The Web server can also generate Boolean queries, which were developed using C.

Why a product from upstart Bluestone? Sapphire/Web runs on the server, is platform independent and required minimal developer training, B&V webmaster Duane Downtain says.

But Web development isn't always predictable, as Loyola Marymount University in Los Angeles found

PHOTOGRAPHY BY ROCKY KNEETEN

out. A student-built site offering general university information had to be revamped by the school's IS department because Loyola Marymount's organizational interests were not properly represented, says Bonnie Weinstein, Web development manager.

To upgrade the site's look, feel, content and navigation, Weinstein selected Microsoft's Internet Assistant — an add-in to Microsoft Word — and shareware, including Homesite X — an HTML editor for Windows 95 and NT 4.0.

Free software has helped other companies, too. Wendel Bordelon, directory administration analyst at Amoco, created a Web site to monitor the company's Hewlett-Packard Co. OpenMail servers. He used public domain Web software from Conseil Europeen pour la Recherche Nucleaire (CERN), the European Laboratory for Particle Physics, and built pages using native Unix commands.

Loyola's Bonnie Weinstein revamped the university's Web site using Internet Assistant and shareware Homesite X.

As the site has grown, Bordelon has moved to commercial products, such as Microsoft's Internet Assistant and Powerpoint for HTML conversion and graphics, respectively, and Visio Corp.'s technical drawing package. Why the change? Service, support and bug fixes are much easier to come by, Amoco's Campbell explains.

At least partly for this reason, Whirlpool Corp. used Adobe Acrobat and Photoshop in preparing images for the Web, says Frank McElligott, a business systems consultant at the Benton Harbor, Mich., company.

Down the road for many Premier 100 organizations is Java, Sun Microsystems, Inc.'s much hyped cross-platform development language. It is still a reach for many developers, except for the most experienced C++ programmers. "We've stayed away because we have a 16 bit [environment] and most Java doesn't support it," says B&V's Downtain. "We're waiting for a killer Java application."

Wells Fargo Bank in San Francisco did not use Java to create its Internet banking service because of concerns about its maturity and security. "We don't want to use anything that people are skeptical about," says Alan Stark, vice president of online financial services.

Still, almost everyone is intrigued by Java development, even if they are worried by its complexity. "It will be a while before Java hits Web sites," says Mitch Kramer, consulting editor of application development practice at Patricia Seybold Group in Boston.

P. MOHAN IS A FREELANCE WRITER IN LOS ALTOS, CALIF.

The trouble with ISPs — and how to avoid it

If you've had trouble accessing your Internet service provider (ISP) or had problems with the speed and quality of the service, or the knowledge of the technical support staff, take heart. You're not alone. Many Premier 100 organizations suffer the same fate.

"We built the Internet [application] based on grants, then paid $10,000 for Internet access, and now [we're paying] $300,000 a year," says Mike Strizich, director of student information services at the University of California in San Francisco. Even changing ISPs, he says, "we're having packets dropped all over the place. The bandwidth isn't there that we're used to."

Bill Donkin took the time to evaluate several ISPs before hiring one. "We want them to own the routers and the line and charge us a flat fee," says Donkin, director of technical services and network operations at Pep Boys – Manny, Moe & Jack, an automotive parts retailer based in Philadelphia. "We don't want to worry about the maintenance of the router they put here for us. When they change routers, we don't want to be involved."

For peace of mind (and contingency planning), Pep Boys plans to hire a backup ISP. "I want to make sure people who use the Internet for work don't get disrupted service," Donkin says.

Once burned is twice prepared. Here are some things to consider when evaluating ISPs, from our Premier 100 organizations.

COSTS. Don't leap from one ISP to another purely for price reasons. "Pricing is based more on competitive than financial prudence. [Some ISPs] are charging too little," which affects the quality of service, says Don Hutchinson, an independent consultant in San Carlos, Calif.

TEMPORAL AND GEOGRAPHIC AVAILABILITY. Does the ISP offer 24-hour service in the localities you need to link?

WEB SAVVY. Is the ISP's technology dated? Can it handle peak connectivity loads? Does it understand the intricacies of your environment?

VIABILITY. Does the ISP have sustainable business to get it through bad times?

PHOTOGRAPHY BY ALAN LEVENSON

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Web Wunderkind

By Leslie Goff

They're savvy, creative and in hot demand. Here's what it takes to keep webmasters happy — and on the company payroll.

Facing high market demand for a limited supply of people with HTML, Java and networking skills, corporate IS departments are training their sights on retaining their hard-earned online talent. Here, managers at four Premier 100 organizations (see box at right) share how they are striving to create enlightened workplaces where these professionals can thrive.

CW: How are you hanging on to your Web staffers?

GIDEON SASSON: [Schwab is] trying to bring developers into a strong partnership with the business, where they actually feel that they own the site. It's very difficult to attract really talented C++ programmers because of our proximity to Silicon Valley. We're considered corporate America, and [that] scares away a lot of talented programmers. We're fortunate not to have that kind of culture ... sometimes it's a challenge for people to adjust to the idea that they own everything being developed. That partnership makes it possible for us to maintain our staff.

MARY CORTINA: Our conservation mission [at the National Wildlife Federation], combined with the IS perspective, makes it really attractive for Web people to be here and stay here. ... We're not going to be paying top dollar, because we're nonprofit. As trite as it sounds, having people understand how their work fits into the organization and the world at large — you can't substitute compensation for that. So we rely on that quite a bit, because it's certainly not the money that's going to keep people here.

SCOTT DINSDALE: [At BMG Entertainment], we tend to look at Web activities as two separate activities. One is the tech side, which involves managing the site, knowing what's coming down the pike — a traditional IS project management role. We look for an experienced IS person who is interested in the Web for the moment, but who is mainly interested in IS. The other side is the creative/marketing side. We don't force an IS person into that role. We look for someone interested in a career in marketing who is computer-aware but not IS-aware. So each side has a career track that joins not just to the Web, but to specific segments within the company that offer a variety of career paths.

WENDY BELSKY: [At Chase Manhattan] we have been very public about saying that this technology is going to be a real enabler for our business, and we continue to make significant investments in the technology. That positions us as a world leader in that respect, and people want to work for a world leader where they know the investments will be made.

CW: How much turnover has your Web staff experienced?

DINSDALE: Our group has been together about 18 months, and we have our first turnover coming

ILLUSTRATION BY TIMOTHY COOK

up [on the marketing side]. On the IS side, we've had no turnover. With our outsourcer, it was a rocky ride for the first six months because of turnover on their side. It seems more stable now.

CORTINA: Our first "webster" left to become a teacher. She was the one who really set up the collaborative framework we have for developing the Web site — she was a real motivator and had a lot of creative ideas about getting people to work together. So we looked for these same qualities again, because we don't have the resources to hire a 20-person dedicated team. In general, people stay here a long time. If you stay five years, you can take a 10-week paid sabbatical. But I can't imagine a webster staying here that long, just because the technology changes so fast.

SASSON: No one from our team has left yet. We had one case of a person joining the group and not making it — it was a new employee, and when he came to us, he had another job offer in the works that was closer to his house, and he left to take that.

CW: What is the work environment for your Web team like?

SASSON: In IS, every organization under the CIO defines its own environment. In the electronic trading organization, we have flexible hours, and staff can arrange their own schedules with their manager. It's quite normal to work from home two days or to work four very long days and take the fifth off. Schwab is a casually dressed company — in that respect, everyone enjoys the same freedom.

BELSKY: We emphasize flex work arrangements. Particularly in some of these jobs, people can go home early for dinner with their families, and then log on at night from home. They can set up formal or informal arrangements with their managers.

CORTINA: We're in Tyson's Corner, in Vienna, Va., and we have 50 acres of land with nature trails and a backyard habitat and demonstration garden. In the evenings [typically people work till about 7 p.m.] we have deer out here eating pears off the pear trees.

CW: What special considerations or perks do your Web staffers enjoy?

DINSDALE: The only thing different from anyone else is the workstation issue. They all have two workstations. One is usually RISC-based, like a Sun, so theirs are much spiffier than anyone else's. But that's just one piece of ego that goes with the job.

CW: What other factors contribute to retention?

BELSKY: We have a number of established forums [our Web people] can become members of, like a technology leadership corps, and a global LAN community that provides an opportunity for people to understand developing on the Internet and intranet. We also have Centers of Excellence for the Internet and intranet. The people chosen for them have demonstrated a high level of expertise, and being a member of any of these forums is an opportunity to learn and develop.

SASSON: There's a high you can get from working at a high-tech company like Microsoft. Then there's another high that comes from end users actually giving you feedback on features they are using that are yours. Here, we're much closer to the user. ... The scale of the opportunity to make an impact on people who are dealing with what is often the second-most important thing in their lives — their life savings — is a huge factor. It's possible, within two months of coming here, to make a huge impact on the site. And usage is increasing so rapidly. That in itself is a high.

CORTINA: People who come here to work on the Web want to work for us because of our environmental and conservation work, but also because we are trying to use this new technology to change the world. Our electronic mission is at the heart of what we do. I think if [the Web team] were just an appendage of a company, it would be very hard to keep people, but with our overall mission, it's hard for people to walk away.

▷ Goff is a freelance writer in New York.

The Panelists and Their Teams

GIDEON SASSON: *Senior vice president, electronic brokerage technology*
Charles Schwab & Co., San Francisco

Sites: www.schwab.com

Staff: 10 developers, four publishers/HTML programmers and a small quality-assurance staff working on the front-end applications; more than 100 C programmers work on the back-end systems.

MARY CORTINA: *Acting director, information technology*
National Wildlife Federation, a nonprofit environmental conservation organization in Vienna, Va.

Sites: www.nwf.org

Staff: A "webster" (a.k.a. webmaster), who coordinates a collaborative effort between IS and each department and enables volunteers from each department to post interactive content to the site; plus an intern, who assists the webster.

SCOTT DINSDALE: *Senior vice president, information systems*
BMG Entertainment, New York

Sites: www.bmg.com

Staff: Three full-time and two part-time employees, including a marketing project leader and an IS project leader.

WENDY BELSKY: *Senior vice president, human resources, Information Technology and Operations group*
The Chase Manhattan Bank, New York

Sites: www.chase.com

Staff: A large distributed staff programs and maintains the site; the business units provide content.

The Premier 100

Company/Organization	Industry	Company Revenue
A & M Records	Entertainment	NA
Advanced Marine Enterprises, Inc.	Maritime Engineering	NA
Alamo Rent A Car, Inc.	Transportation	$1.4B
Alaska Airlines, Inc.	Air Transportation	$1.1B
Allegany County (Md.) Human Resources Development Commission	Government	NA
Aluminum Company of America*	Metal & Glass Manufacturing	$12.5B
Amazon.com	Retail	NA
AMP, Inc.	Electronics	$5.2B
APL Ltd.	Transportation	$2.9B
Armstrong World Industries	Interior Furnishings	$2.1B
Arthur D. Little, Inc.	Business Services	$514M
Ashland, Inc.	Oil & Gas	$12.2B
Auer Precision Co.	Electronics	NA
BankAmerica Corp.*	Financial Services	$12.5B[1]
Barnett Banks, Inc.	Financial Services	$2.5B
Battelle Pacific Northwest National Laboratory*	Research	$539M[2]
Bechtel Corp.*	Engineering & Construction	NA
Beth Israel Deaconess Medical Ctr., Nuclear Medicine Dept.	Health Care	$436.1M
Black & Veatch**	Engineering	$1.1B
Booz, Allen & Hamilton, Inc.*	Management Consulting	$1B[3]
Caliber System, Inc.	Transportation	$2.5B
Cambridge, City of	Government	NA
C. H. Robinson Co.	Distribution	NA
CH2M Hill, Inc.*	Engineering	NA
Charles Schwab Corp.	Financial Services	$1.4B

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Company URL	Premier 100 Application
amrecords.com	Interactive site with video, audio, news and contests. Fans get up-to-date information on clients represented by A&M. Improves name recognition and Internet presence for company.
www.advmar.com	Ship design and advertising. Showcases company, garners international exposure and provides information on shipbuilding.
www.freeways.com	Online car rental reservations for customer convenience and increased revenue. Development cost: $100,000.
www.alaska-air.com	Web site used for direct ticket purchases, reservations and flight information. Customer service realized through ease and convenience of information access and improved call-wait times.
NA	Client tracking and communications across various county agencies. Provides file sharing and E-mail capabilities. Time savings and paper savings. Development cost: $40,000.
www.alcoa.com	Corporate communications and news reports. Money saved by automated distribution of information and increased communications. Annual cost savings: $50,000.
www.amazon.com	Online bookstore. Allows customers to search by title, author, subject or keyword, pay by credit card and have items shipped to them.
connect.amp.com	Information and electronic commerce. Allows access to current information on 75,000+ products, including application and product specs. Cost savings: $165,000. Development cost: $1.5M.
www.apl.com	Provides tracking information on shipments. Benefits include paperless environment and better customer service. Development cost: $100,000 to $150,000.
www.armstrong.com	Customer service and sales. Provides real-time access to logistics information. Development cost: $30,000.
www.arthurdlittle.com	Marketing of company services. Increases customer contact and global accessibility. Revenue benefits: $600,000. Development cost: $30,000.
www.ashland.com	Store locator provides easy access for customers searching for store locations.
NA	Engineering drawings transferred to customers via Internet. Improves customer communications with increased data availability and international communications. Development cost: $1,200.
www.bankamerica.com	Knowledge-based technical support for PC problems. Development cost: $20,000.
www.barnett.com	Information for tourists and people relocating to Florida. Improves customer service and generates new accounts.
www.pnl.gov	Provides better access to financial reports and improves productivity, speed and control. Employees select from preformatted reports and create their own subscription lists. Annual savings: $350,000.
www.bechtel.com	Access to engineering documents and information. Reduces paper costs and increases speed of information transfer. Development cost: $350,000.
www.bidmc.harvard.edu	Clinical information for referring physicians. Provides instant information access, international distribution and inexpensive way to dispense information. Development cost: $1,000.
www.bv.com	Construction management system. Aids in tracking construction information across the U.S. Annual cost savings: $1M.
www.bah.com	Access to collective knowledge and corporate communications. Delivers uniform product information and helps solve staffing issues.
www.caliberys.com	Package tracking, customer service. Improves customer service and provides cost savings. Development cost: $120,000.
www.ci.cambridge.ma.us	Electronic city hall. Provides easy access to government, community officials, information and resources. Development cost: $10,000.
www.chrobinson.com	Shipment tracking service. Provides better customer service and reduces phone costs and personnel time. Development cost: $40,000.
www.ch2m.com	Global staffing tool for project teams. Able to find skilled staff and reduces time and effort to complete projects. Development cost: $30,000.
www.schwab.com	Online trading, marketing and electronic commerce. Reduces employee costs, improves customer service and generates customer savings.

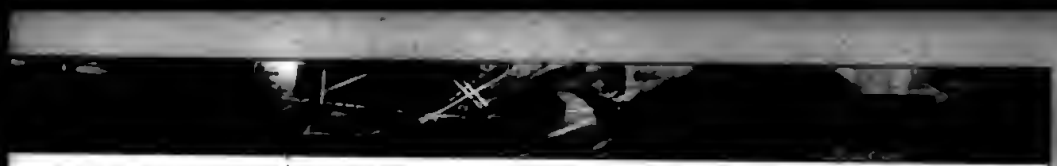
NA = Not available. Some Premier 100 organizations do not have public Web sites and are honored for their Internet/Intranet applications.

ILLUSTRATION BY ERIC YANG DESIGN, INC.

The Premier 100

Company/Organization	Industry	Company Revenue
City of Austin Electric Utility Department*	Utility	$200M+
Columbia/HCA Healthcare Corp.	Health Care	$17.7B
Consolidated Grain and Barge Co.	Wholesale	$1.9B
Coopers & Lybrand L.L.P.	Business Services	NA
CSC International, Inc.	Membership Services	$1.4B
DHL Airways, Inc.	Transportation	$5B[3]
Dreyfus Corp., The	Financial Services	NA
Encyclopaedia Britannica, Inc.	Publishing	$407M
Environmental Protection Agency	Government	NA
Equitable Cos., The	Insurance	$7.3B
Federal Express Corp.	Transportation	$10.3B
First Union Corp.	Financial Services	$10.6B
Florida Power & Light Co.	Utility	$5.5B
Gas Research Institute	Research	NA
Geisinger Health System*	Health Care	NA
GenCorp**	Diversified Manufacturing	$1.8B
Gould Paper Corp.*	Wholesale	NA
Harris Corp.	Electronics	$3.4B
Hastings Entertainment, Inc.*	Retail	NA
Hazelden Foundation	Nonprofit	NA
HBO & Co.	Entertainment	$495.6M
Heritage Environmental Services, Inc.	Business Services	$100M+
Holiday Inns, Inc.	Hospitality	NA
Indianapolis VA Medical Center*	Health Care	NA
IntelliChoice, Inc.	Automotive	NA

All companies selected for Internet applications unless followed by *(intranet) or **(combination Internet/intranet). [1]Income [2]Business volume [3]Estimate



Company URL	Premier 100 Application
www.electric.austin.tx.us	Utility planning and system analysis. Immediate access to information reduces labor costs and increases productivity. Cost benefit: $10,000 to $20,000. Development cost: $40,000.
www.columbia.net	Site serves as marketing, public relations and resource tool. Generates new revenue and clients. Site includes healthy recipes, encyclopedia of health information and listing of more than 500 facilities
www.cgb.com	Provides agricultural information, including grain prices, and improves communication and relationship with farmers. Development cost: $5,000.
www.colybrand.com	Tax News Network (www taxnews com) provides most current tax information. Enhances company recognition and expands consumer base.
www.cnc.com	Shoppers Advantage, online shopping service. Reduces customer service calls and telephony costs. Revenue benefits: $500,000. Development cost: $300,000.
www.dhl.com	Package tracking service. Provides shipping information to improve customer service
www.dreyfus.com	Account and sales information. Customers set up new accounts, track status and access daily rates and prices. Improves ease of transactions and security. Development cost: $737,500.
www.eb.com	Customer service and online encyclopedia. Provides easy access to current information and links to other related sites.
www.epa.gov	Provides easy access to up-to-date EPA information for public.
www.equitable.com	Interactive site with financial simulation game applet focused on financial fitness to encourage clients to think about lifestyle strategies. Focuses on needs, rather than disclosure of financial figures.
www.fedex.com	Package tracking service. Customers can ship and track own packages, leading to reduced customer service costs and labor costs.
www.firstunion.com	Online banking service allows access to account information and transactions. Reduces telephony costs.
www.fpl.com	Customer service. Customers access history of consumption and determination of bill. Savings through decreased volume of calls. Development cost: $20,000.
www.gri.org	Provides consumers with fast and easy access to current technical information about natural gas. Annual cost savings. $2M. Development cost: $1.5M.
www.geisinger.edu	Distribution of information, updates and other essential and consistent information while reducing patient care and paper costs. Cost benefit: $20,000. Development cost: $30,000.
rw.gencorp.com	Supports engineering, quality and manufacturing, allowing staffers at remote locations to view documents, videoconference via desktops and perform design reviews. Increases productivity.
www.gouldpaper.com	Web site for sales and customer support. Reduces call volumes and increases sales with greater sales force involvement. Development cost: $100,000.
www.harris.com	Product advertising and lead generation for sales forces. Customer access to current information on new products and spare parts
www.hastings-ent.com	DataDoc Online. Reflects daily changes in video rentals. Inputs, rentals and returns across 115 area locations. Saves IS time and improves data accessibility and accuracy. Annual savings: $150,000+.
www.hazelden.org	Public service and electronic commerce. Offers inspiration, information and products to people who have, or want information on, addictions.
www.hbo.com	Original comedy and drama programs developed for the Internet. Customer feedback used to identify customer needs and development of content and services.
www.heritage-enviro.com	Marketing, customer service, technology and regulatory services. Customers provided with free waste minimization audit. Serves to increase market share. Development cost: $20,000.
www.holiday-inn.com	Customer service and marketing. Online real-time reservations. Customers can view accommodations. Development cost: $300,000.
www.va.gov/station/583.htm	Patient database. Provides real-time access to patient information and reduces labor and paper costs.
www.intellichoice.com	Automotive information and value. Provides sales agents and fleet managers automated, on-demand production costs of reports. Revenue benefits: $90,000 to $100,000. Development cost: $5,000 to $10,000.

NA = Not available. Some Premier 100 organizations do not have public Web sites and are honored for their Internet/Intranet applications.

The Premier 100

Company/Organization	Industry	Company Revenue
J. B. Hunt Transport Services	Transportation	$1.2B
Johnson & Higgins**	Insurance	$1B
KeyCorp*	Financial Services	$6.1B
KPMG*	Business Services	NA
Kraft Foods, Inc.	Food & Beverage	$27B
Lands' End, Inc.	Retail	$1B
Levi Strauss & Co.	Apparel & Textile	$6.7B
Lutheran Church – Missouri Synod**	Nonprofit	NA
Marriott International, Inc.	Hospitality	$9B
McDonald's Corp.	Restaurant	$9.8B
Metropolitan Tickets, Inc. (MetroTix)	Entertainment	NA
Mobil Corp.	Oil & Gas	$75.4B
MovieFone, Inc.	Entertainment	$15M
National Personnel Associates Cooperative, Inc.	Business Services	$0.6M
New York Foundation for the Arts	Nonprofit	NA
North American Company for Life & Health Insurance*	Insurance	NA
Ourisman Chevrolet and Geo, Inc.	Retail	NA
Pacific Enterprises/Southern California Gas Co.*	Utility	$2.3B
Parker Hannifin Corp., Compumotor Division*	Industrial Automation	$3.6B
Peapod	Retail	$30M+
Pennsylvania State University at DuBois	Education	NA
Pep Boys – Manny, Moe & Jack**	Automotive Parts	$1.6B
PictureVision, Inc.	Online photo developing	NA
Plymouth, Inc.	Paper Products	$20M[3]
Progressive Corp., The	Insurance	$3B

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Company URL	Premier 100 Application
[illegible]	[illegible]
www.jh.com	Marketing and customer services. Includes insurance policy summaries, certificate requests, manuals and interactive service plans. Reduces costs and errors, streamlines workflow. Annual savings: $1M.
[illegible]	[illegible]
www.kpmg.com	Knowledge management and corporate communications system facilitates collaboration on projects. Productivity increased via information exchange and streamlining workflow. Cost: $4.5M.
[illegible]	[illegible]
www.landsend.com	Interactive shopping for U.S. customers. Promotes sales and customer service by providing overstock catalog and online event information, such as quilt contest winners.
[illegible]	[illegible]
www.lcms.org	Provides information on church to public; intranet provides information on investments, funds, Internet resources and reports, as well as E-mail among church branches and headquarters.
[illegible]	[illegible]
www.mcdonalds.com	Public access to information on franchise data, human resources, marketing information, employment opportunities and annual reports. Development cost: $160,000.
[illegible]	[illegible]
www.mobil.com	Web site for public relations, electronic commerce, company information and communications. Advantage realized in ease of access to information for distributors and wholesalers.
[illegible]	[illegible]
www.npainc.com	Job placement service provides fast access to job orders and candidate data files. Revenue benefit: $2.4M. Development cost: $200,000.
[illegible]	[illegible]
NA	Computerized insurance evaluation. Saves time and eliminates bias in evaluations. Customers access account information quickly. Development cost: $2,000 to $3,000.
[illegible]	[illegible]
www.pacent.com	Marketing, planning and operations. Shares business information for improved decision making, efficiency and competitiveness. Development cost: $60,000.
[illegible]	[illegible]
www.peapod.com	Online grocery shopping and delivery service. Saves customers time and provides information about products. Revenue benefit: $30M+. Development cost: $50,000.
[illegible]	[illegible]
www.pepboys.com	Marketing and customer service functions. Benefits include easy access to company information, better communication and paper cost savings. Development cost: $50,000.
[illegible]	[illegible]
www.plymouth-fun.com	Marketing and communications tool directed primarily at children to increase company awareness. Feedback used to develop new product lines. Development cost: $6,000.
[illegible]	[illegible]

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The Premier 100

Company/Organization	Industry	Company Revenue
Purdue University	Education	NA
R. M. Vredenburg & Co.	Business Services	$18M[3]
Rich Products Corp.	Food & Beverage	$1B[3]
Rockwell International Corp.*	Electronics	$13B
Rotex, Inc.*	Equipment Manufacturing	NA
Sabre Interactive	Travel	$1.5B+
Samsung Construction Equipment America Corp.	Construction Equipment	NA
Saturn Corp.	Automotive	NA
Schnuck Markets, Inc.	Retail	$1.8B[3]
Seattle, City of	Government	NA
Sharper Image Corp.	Retail	$204.2M
Spiegel, Inc.**	Retail	$3.2B
Superior Electronics Group, Inc.	Electronics	$25M
TRW, Inc.**	Automotive & Aerospace	$10B
United Airlines, Inc.	Air Transportation	$14.9B
United Healthcare Corp.**	Health Care	$5.7B
United Parcel Service of America, Inc.	Transportation	NA
U. S. Postal Service	Government	NA
University of California	Education	NA
University of Texas Medical Branch at Galveston*	Health Care	NA
University of Texas — Houston Health Science Center	Education	$378.4M
Vanderbilt University*	Education	NA
Wells Fargo & Co.	Financial Services	$2.7B
Weyerhaeuser Co.*	Forest Products	$11.8B
Whirlpool Corp.	Appliances	$8.2B

All companies selected for Internet applications unless followed by *(intranet) or **(combination Internet/intranet). [1]Income [2]Business volume [3]Estimate

Company URL	Premier 100 Application
[illegible]	[illegible]
www.vredenburg.com	Worldwide access to engineering specs for U.S. Navy vessels. Allows immediate access to accurate information. Cost benefit: $100,000. Development cost: less than $100,000.
[illegible]	[illegible]
www.rockwell.com	Each area on the manufacturing floor has its own home page updated every 60 seconds. Improves process and quality. Cost savings: $100,000s. Development cost: less than $200,000.
NA	[illegible]
www.travelocity.com	Online travel and booking service gives consumers easy access to travel services. Consumers access Sabre's travel reservation system and Worldview database containing travel destination information.
[illegible]	[illegible]
www.saturncars.com	Marketing, sales, customer service. Customers can check Saturn prices/specs/options, obtain prices and apply for credit. Serves to reduce workload of retailers, increase brand awareness.
[illegible]	[illegible]
www.ci.seattle.wa.us	Electronic city hall. Provides citizens with means to communicate with government and more convenient and economical access to services and information. Development cost: $250,000.
[illegible]	[illegible]
spiegel.com/spiegel	Online catalog and ordering capability. Improves sales, customer feedback and communication.
[illegible]	[illegible]
www.trw.com	Job postings. Improves employee morale, helps retain and attract high-quality employees via improved communication.
[illegible]	[illegible]
NA	Health services staffed by nurses and masters'-level counselors offer help with physical, emotional and other health-related questions. Users send E-mail to staff and receive personalized responses.
[illegible]	[illegible]
www.usps.gov	Postal information and prices. Increases customer base.
[illegible]	[illegible]
www.utmb.edu	Nursing staff policies and procedures. Reduces paperwork and medical failures. Provides immediate notice of policy changes to enhance quality of nursing services.
[illegible]	[illegible]
www.vanderbilt.edu	Online student registration. Benefits include convenience, reduced labor costs and time savings.
[illegible]	[illegible]
www.weyerhaeuser.com	Allows easy access to accounting data, saves time and reduces paperwork. Development cost: $1M.
[illegible]	[illegible]

NA = Not available. Some Premier 100 organizations do not have public Web sites and are honored for their Internet/intranet applications.

Premier Paradox

Amid the wealth and opportunity of the Internet are those who will never experience anything online. It's not the first time an underclass has been left behind. . . .

It probably won't be the last.

The Internet is a boon for business, for personal communications, for cheaper and faster access to entities worldwide — but not for everyone. Those who can't afford even last year's PC models, who don't work in jobs where they can learn computer skills, who don't even have phone service — these are the people technology forgot.

We had Wade Rowland, a Canadian author and consultant, and Mitchell Moss, director of the Taub Urban Research Center at New York University, along with research assistant Anthony Townsend, engage in an online debate on the societal impact of the Internet. Excerpts follow:

WADE ROWLAND: The question of access breaks down into access to the physical appliances — the computers, modems, Internet service providers and so on — and access to the skills and knowledge required to make use of the resources an Internet hookup offers. The 'net is like a library in the sense that the more education you bring to it, the more you can mine out of it. The basic issue is one of providing a decent, humanities-centered basic education for everyone. The technologies of today are making that more, rather than less, important.

Access to hardware is an easier issue to address. If people can't afford the equipment necessary to hook up to the 'net, society should help them out through government assistance of one form or another. In the early days of the telephone, universal access was made mandatory through legislation that, at the same time, granted network monopolies to the Bell companies. And you didn't need to have the cash to buy a telephone (which, by the way, cost about the same as a basic Internet computer does today) because Bell would lease one to you for a few cents a month. I see no reason why the same kind of leasing arrangement wouldn't work today, for the Internet. After all, the 'net is fast becoming every bit as essential a service as the telephone.

ANTHONY TOWNSEND: Where telephones were standardized early on when the industry was monopolized, the Internet and any successors will evolve in an era of unprecedented deregulation and rapid innovation. So while the U.S. government has had 60 years to leisurely, yet quite effectively, pursue

PHOTOGRAPHY BY PETER SERLING

Wade Rowland is a consultant, founding partner of Blue Cat Design, and author in Port Hope, Ontario. His latest book, *Points of Convergence*, will be published in the fall. He can be reached at wrowland@eagle.ca.

Mitchell Moss (left) is director of the Taub Urban Research Center at New York University and co-author of "Leaders and Losers on the Internet," a study of host computers. He can be reached at moss@is2.nyu.edu. Anthony Townsend is a research assistant at the Taub center.

goals of universal access to telephones, it is unlikely that any government policy will be able to rewire every household every few years to replace obsolete equipment.

In the future, the issue of universal service will not be a yes or no question, but rather one of "how fast?" or "how good?" Already, since the explosion of the World Wide Web, we have seen the hype of new access technologies pass from ISDN to cable modems to asymmetric digital subscriber lines (ADSL), each becoming obsolete even before it is fully deployed. Serious efforts must be undertaken to determine what level of access is the minimum necessary at school, work or in the home for everyone.

ROWLAND: Universal access is dependent on just one thing: the collective will to make it happen. If we want it, we can have it. At the moment, it's not even on the political agenda; it needs to be put there. I can't see why it shouldn't be possible to develop the Internet equivalent of the old Western Electric black Bakelite phones that were basic, but reliable to the point of indestructibility.

Let's say an Internet appliance costs $400 to build in quantity; it should be possible for a telco to lease it for less than $10 a month (including 'net access) and still make a profit. Remember, AT&T is *giving away* 'net access to its customers at the moment. (Bandwidth and access issues are separate and distinct. There is no reason that access policies need have any effect on continuing development of faster network links like ISDN and ADSL. Indeed, it seems logical that greater access would speed these developments rather than slow them.) I think it's a mistake to get too caught up in the whiz-bang bells

Continued on page 66

PHOTOGRAPHY BY EDWARD GAJDEL

"Universal access is dependent on just one thing: the collective will to make it happen. At the moment, it's not even on the political agenda; it needs to be put there."

and whistles like Java and VRML and 3-D and so on. If we want to watch streamed video, we have our television sets for that. The fact that the technology is evolving should not deter us from insisting on universal access. After all, one doesn't need a $2,000 surround-sound tuner with sub-woofer and ceramic tweeters to enjoy the benefits of radio.

MITCHELL MOSS: Even telephone access isn't ubiquitous, though. According to the Census Bureau, more than 6% of all U.S. households don't have a telephone — 5.6 million households affecting approximately 15 million people. These households are concentrated in large cities and consist predominantly of young, minority and poorly educated people. No telephone service limits their participation in many activities, much less direct access to the Internet.

ROWLAND: In Canada, we have government programs to assist schools and libraries to get on the 'net, to provide free public access points.

MOSS: In the Bedford-Stuyvesant section of Brooklyn, N.Y., a nonprofit organization, the Chocolate Chips Electronic Office, operates a computer center designed to bring "the world of information technology to Brooklyn's African-American community." Another nonprofit, the National Public TeleComputing Network, has established community computer systems in cities across the country to help citizens get access to the electronic information services by establishing a "Free-Net" system that is operated by local community members and groups. Surprisingly, New York City, alone among major U.S. cities, does not have a Free-Net. In Berkeley, Calif., workstations accessible to the public have been placed in Laundromats and at gathering places for the homeless.

California also has two of the three regions with the most Internet hosts in the U.S. — Silicon Valley is first, the Route 128 high-tech corridor in Massachusetts is second and Los Angeles County is third, according to our research. Since new telecommunications policies rely on market criteria to guide investment in infrastructure, those areas with dense concentrations of users will be the first to get the benefits.

"More than 6% of all U.S. households don't have a telephone — 5.6 million households affecting approximately 15 million people ... predominantly young, minority and poorly educated people."

ROWLAND: I don't think that the number of Internet hosts in a particular geographic location has much to do with anything. My own Internet business uses a host in Atlanta, because it offered better value than the hosts available closer to home in Toronto. I could just as easily use a host in London or Vancouver.

TOWNSEND: Given the huge variety of private, public and military networks which make up the Internet, the geographic location of hosts is really the only measure we have to work with. Because a large number of hosts are not central Web servers but LAN desktop machines and, to a lesser extent, secondary servers for mail and news, while the measure may misrepresent persons in a situation like yours, it shows overall trends.

Another, perhaps more informative, measure of the use of the Internet among cities and regions is to map concentrations of registered domains. In fact, Imperative (www.internet.org) has been doing this recently, and its site has a list of the top 100 U.S. cities by number of domains.

MOSS: Of the approximately 100,000 domains classified by Imperative, more than one-third, 41%, are used by service industries; 17% are controlled by manufacturing firms and 17% by retail trade firms. Wholesale trade accounts for 9%, finance, insurance, and real estate for 8%, and transportation, communications, electric gas and sanitary account for 5%. Of the remaining 3%, public administration is less than 1%.

Still, it is shocking how quickly federal agencies have switched from paper to electronic forms of distribution. The Census Bureau has announced that some reports will not be printed, but will only be available electronically. Other federal agencies, such as the U.S. Department of Housing and Urban Development, are using the Internet to distribute information about grants, loans and applying for federal aid. What will this mean to nonprofit organizations and civic groups that lack easy access to the Internet?

ROWLAND: The massive migration of government services to the Web (and it's happening all over the world) is one more reason why government has to get involved in making Web access affordable and universal. The 'net in all its many facets, from home banking and shopping to library access and research resources to mail and newsgroups and distance education, is getting very close to the stage of being an essential service, and it is in everybody's interest to see that access is available regardless of income or location.

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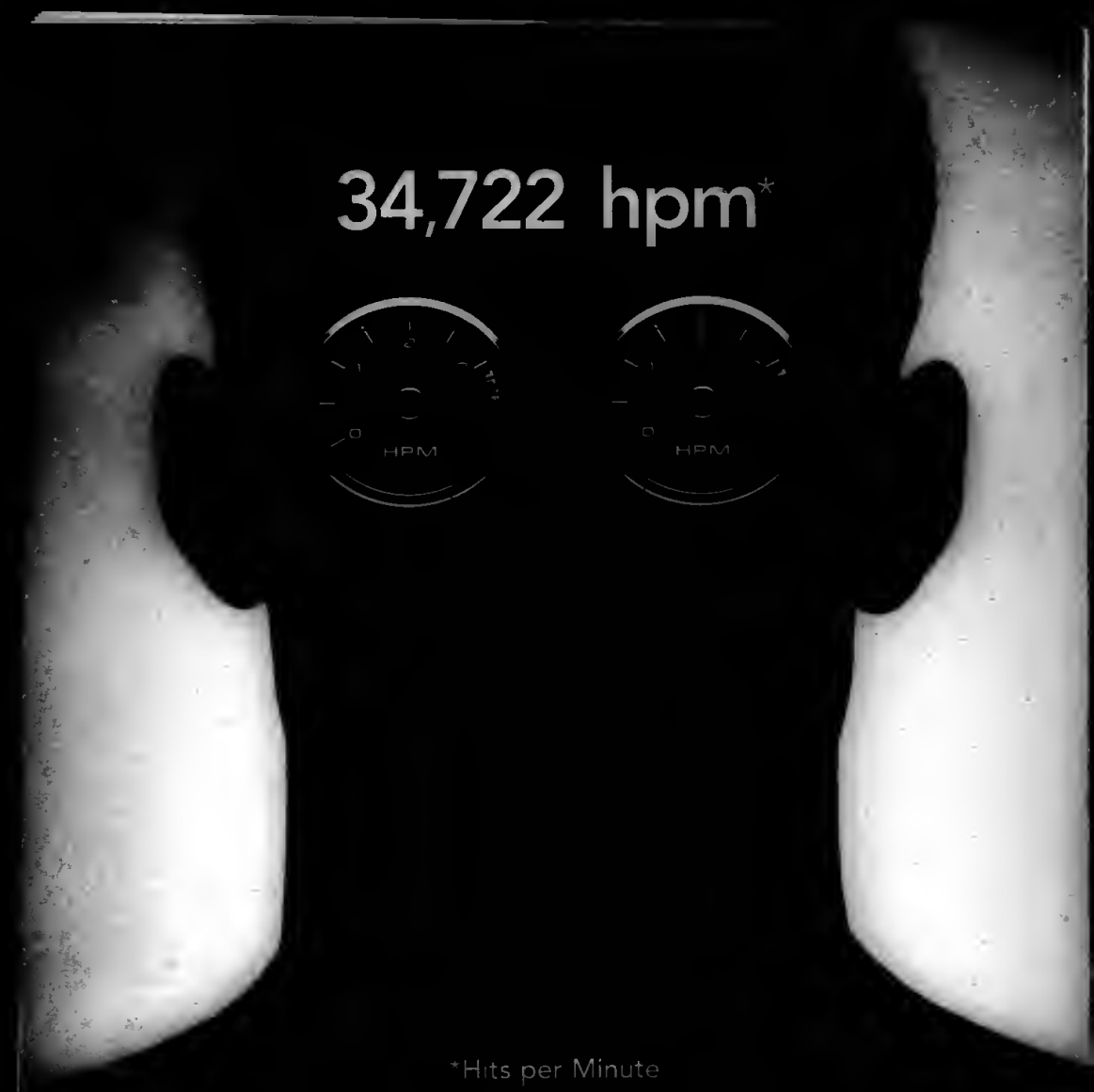

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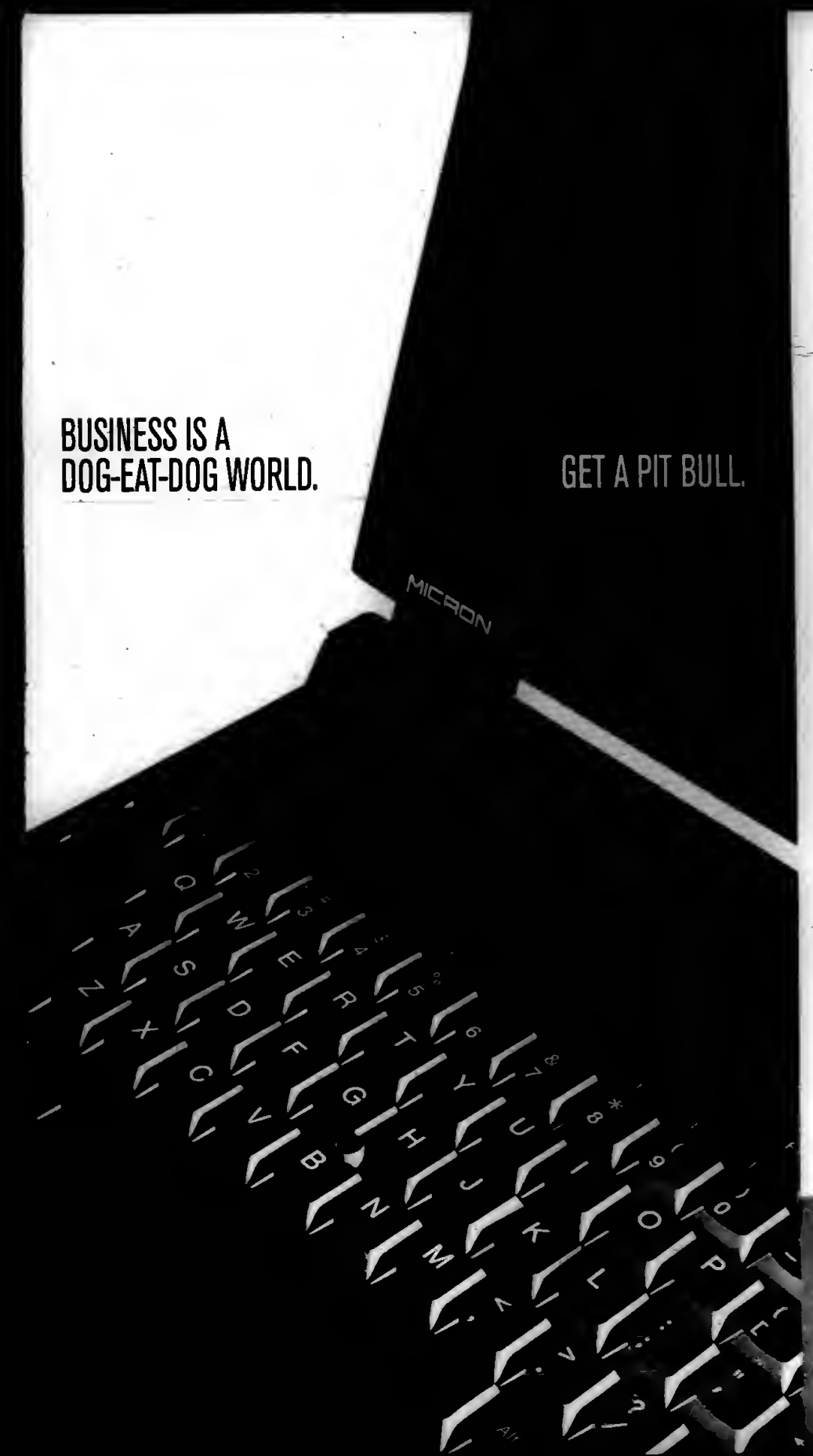

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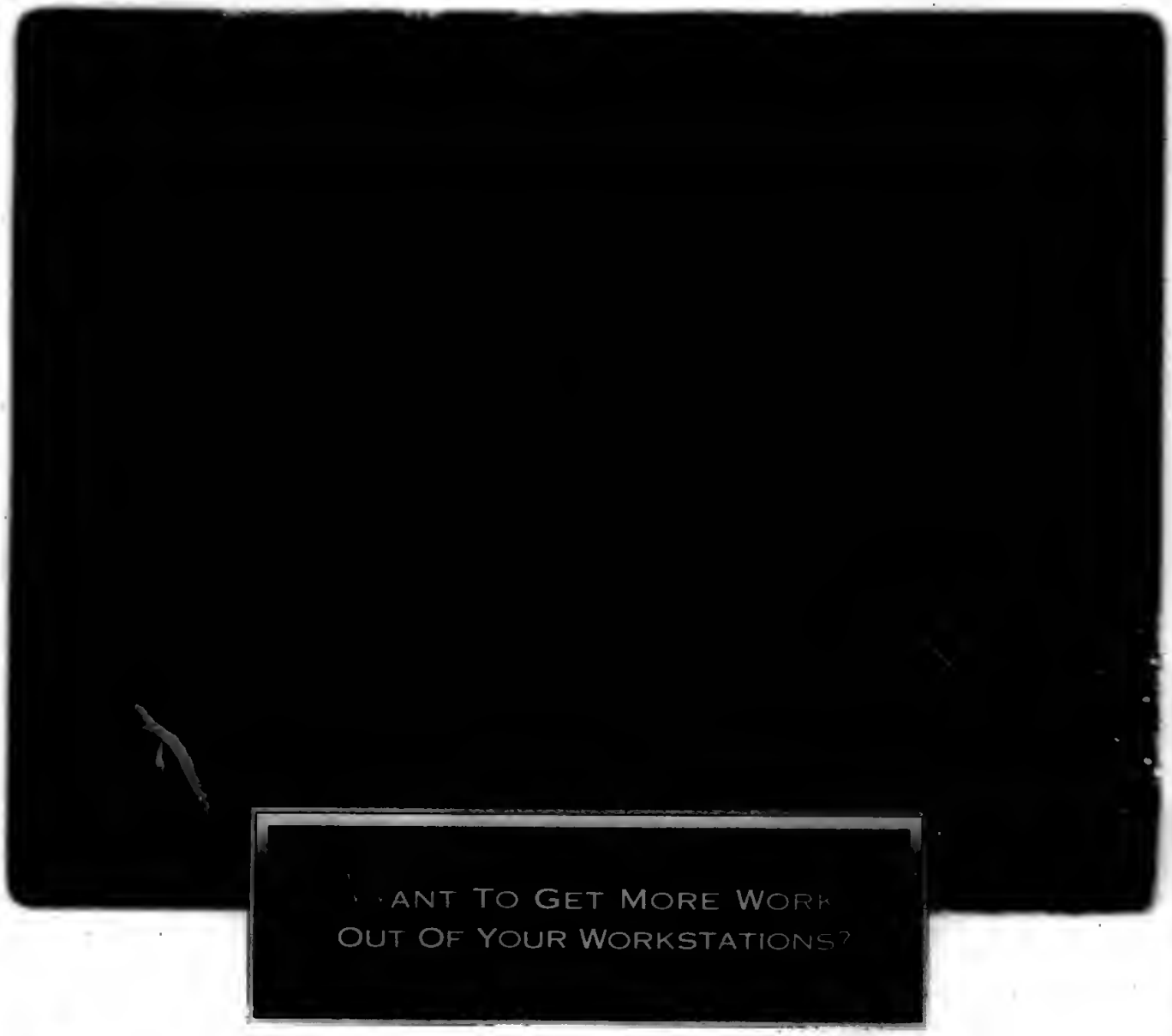

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